

كثير من الجهد



BYEIONS... "Excellent news."

US scuttles the pirates

by George Black and Howard Karten
A MILESTONE decision made last week in a US court that computer programs can be copyrighted is being heralded as the beginning of the end for pirates.
Three judges of the Philadelphia appeals court ruled in favour of Apple and against a maker of Apple-II lookalikes, Franklin Computer of New Jersey. They laid down that protection was not confined to literature, flatly disagreeing with a British appeal court decision in 1981 that only truly literary works were covered.
Apple scored a victory over the Formula lookalike Pineapple in a district court earlier this year, but this is the first time it has reached appeal.
Now UK industry leaders hope the outcome will spur the government into framing its new copyright law, due since the Green Paper over two years ago.
"The Apple result is excellent news," said Doug Eyelons, director-general of the Computing Services Association. "The software business is international and each country must get its own legislation. We're getting restless about the situation here and want the civil servants to bring in the law that we're promised."
Both the CSA and its US equivalent ADAPSO are contributing to a World Intellectual Property Organisation inquiry into copyright law.
There are many program-protectors on the market and a £100,000 project is under discussion between the British Technology Group and the National Physical Laboratory, to develop a new physical lock. But most experts agree that there is an equal

need for tougher laws.
The main obstacle to resolving the question in court has been reluctance of firms to face high costs; several wrangles have been settled privately.
Franklin admitted that its Ace 100 machine copied programs for the eight-bit bestseller, but argued that they were software and therefore not copyrightable. But the judges unanimously held that the Apple's DOS 3.3 operating system, Applesoft and Autostart-ROM were protected by copyright even though they were on a chip.
They reversed last year's verdict by the lower, federal district court which had supported Franklin's view that the only dispute was over a device for which Apple had no patent. American copyright lasts for 75 years; patent can only cover 17 years.

1,000 jobs are set for Scotland

A SCOTTISH Development Agency investment in Californian chip company International Microelectronics Products looks like paying off with a £60 million factory and 1,000 jobs. The SDA put £620,000 into IMP in return for a commitment that IMP would come to Scotland when it expanded overseas, or the SDA would get its money back. Now the two-year-old custom circuit maker wants a factory in operation by 1986.

Rair drops out

RAIR has dropped out of the terminal distribution market in a deal which sets up a new independent company, RTS Technology. Following a £1 million cash injection from Prudential earlier this year, Rair now wants to concentrate on marketing its multi-user business microcomputer. RTS Technology has taken over all orders, agency contracts and staff from Rair Terminals business.

Sinclair's £14m

SINCLAIR Research, suffering little from the cut-throat micro price war, turned in profits up 61% to £14 million on a turnover of £54.5 million last year. Buoyant UK Spectrum sales made up for disappointments in the US market. This year should be "pretty good", too, says Sinclair, with an up-market business computer giving a new market niche.

Grundy debts

GRUNDY Business Systems, which is expected to go into liquidation today, has about "250 creditors" and debts "in excess of £1.5 million". Tim Harris, of accountant Deloitte, Haskins and Sells, has received a number of interested enquiries.

Shareholders pull Dragon from brink

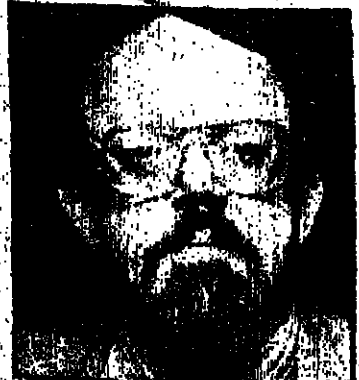
by John Riley
WELSH microcomputer maker Dragon Data was bailed out last week when institutional shareholders put together a £2.5 million financial rescue package.
The company has suffered a price-cutting war, production problems and a drop in demand during the summer. But the rescue package should see the company through until the expected Christmas sales rush.
"It was a seasonal product but nobody knew how seasonal," said Ron Artus, chairman of Prutec (the technology investment subsidiary of the Prudential Assurance Company, which holds 42% of Dragon's shares). "Who knows, if it had been a rainy summer sales might have been better, with more people staying indoors and using computers," he added. "The price cutting exacerbated the whole thing."
Dragon Data's managing director, Tony Clarke, is to step down ("for personal reasons") and Prutec has arranged for GEC to second one of its top executives to take Clarke's place temporarily. The Prudential is GEC's leading shareholder.
When asked if GEC, which recently angled to buy Torch, might be interested in taking over Dragon, Artus said: "I have no knowledge of this. We asked GEC for its help and it agreed to help with a temporary problem."
Artus also said that Dragon's creditors have not called in their debts, that the Dragon 32 is still in production and that there is "no chance of liquidation". He added, "The main shareholders will do what's necessary for the short term - that doesn't necessarily mean cash injection but could mean bank guarantees - and we forecast a bright future."
Among Dragon's shareholders are Prutec (42%), the Welsh Development Agency (23%), Mettoy (15.3%), and the National Water Board (8.6%). Dragon originally belonged to Mettoy, which makes Corgi toys and Wembley footballs, but last November Mettoy sold most of Dragon, gaining £900,000 to see it through its own financial problems.

DEC plans new range and Unix compatibility

by John Kavanagh
MINICOMPUTER market leader Digital Equipment (DEC) is working on a new 16-bit range and is planning to offer operating system compatibility from its Professional microcomputer up to its 32-bit Vax family through Unix.
Unix compatibility is planned for the start of 1984 and the new 16-bit machines should appear later in the year.
At the same time the company has adopted a new aggressive stance with its chip- and board-level products and is aiming for head-on fights in certain markets with established microelectronics specialists such as Motorola and Intel.
The launch of the new 16-bit range will see the development of the existing PDP-11 family going full circle. Last year DEC announced the J11 processor which put the power of the top-end PDP-11/70 on two chips. Last week the company unveiled a board-level processor, the LSI-11/73, including the J11 chips, to a user conference in Zurich.
"Products will now follow at the systems level," said European product marketing manager Marc Zavadil. "At present the PDP-11/70 system takes up 18 circuit boards. We now have this single-board computer. But we want to do things properly. It takes at least six months to get a systems product out."
"We are coming to market with a chip and a board-level product because our customers have longer design cycles if they are working from chips."
But Zavadil said the J11 chips and boards would open up new markets for DEC. The J11 uses CMOS technology, which needs very little power.
"It will find a niche wherever there is a need for low power consumption, such as in portable equipment," he said. "In such cases customers will prefer the J11 to products from the likes of Intel and Motorola."
"In addition the board product is software compatible with PDP-11 minis, so it could find a place as a controller in distributed data processing networks in place of, say, Intel boards."



ZAVADIL: "Products will follow."



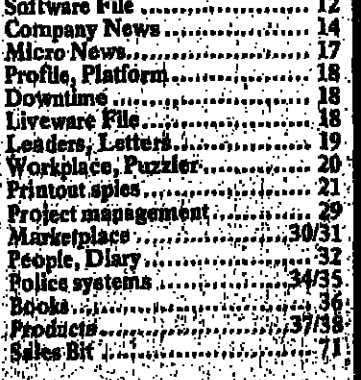
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Software Month watches 16-bit fight 22/26



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The relationship between Moon and Pegasus was established when Moon was setting up Curry's Micro C chain. He evaluated the Pegasus software for sale in Curry's shops. It passed the test and is on sale at Micro C branches.

Moon will be involved in running Pegasus and HB systems. In particular the Pegasus accounting software is to be launched in the US on November 15 and Moon is

Stanley said Moon was chosen to head Pegasus and HB Computers because "he knows his way round the retailing business, and this sort of business is certainly coming down to high street level.

Further UK growth of Pegasus is expected and a new office is

UNIX is a trade mark of Bell Laboratories.

The issue is raised whether users might be better off giving up the search for a large mini in favour of a mainframe, accepting the cost burden for greater flexibility, though Newman regards this as a

But last week five other operations were added to Southgate's division. They were two fire security firms; microcomputer and electronics components distributor Gothic Crellon; energy and communications firm Thorn EMI Dynatel; a US manufacturer of magnetic stripe bank cards, Thorn EMI Malco; plus the new robotics operation.

The robotics set-up now includes Hazmac (Handling), a UK firm specialising in materials handling. The company is being taken over by Thorn EMI in a £7.30.000

"We want to make sure each department knows what the others are doing," he said. "We are also considering the wider relevance of data processing to what we do."

Ingham said the plan was being examined by specialists in the Cabinet Office. The go-ahead decision should be made this year, but would depend on the cost.

Whitehall press officers have very little automation. Even the Department of Trade and Industry press officers do not have word processors.

Fifteen other manufacturers' systems and replacement philosophies are considered, most quite favourably, with the opinion that

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[illegible][illegible]

By the end of 1985 the companies expect to have 50 research staff conducting fundamental research into expert systems and development of techniques of knowledge engineering. The companies have agreed that the results of research at the institute will be freely available to all three companies.

A spokesman for ICL said that

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SCHLEE... "We think it's still got plenty of life."

Root's Unix push

by Nuala Moran
THE Unix software company, Root Computers, has launched an LSI-11/23 compatible board, which it hopes will become a vehicle for selling more of its software.

The board, IS-68K, sits on the LSI-11 Q bus. It is designed and manufactured by Integrated Solutions Inc, of California, around a Motorola 68000 processor.

According to Robin Schlee, Root's marketing director, "The IS-68K has a lot packed on to one board."

It has 256 Kbytes of memory and it is a whole CPU on a very small board, so it will lend itself to the coming trend of making computers smaller and smaller."

The board was designed specifically for Unix, although Schlee said there was nothing to stop other operating systems being run on it.

The Unix implementation for the IS-68K is Uniplex from Unisoft, the American company which Root represents in the UK. Root hopes the board will stimulate the Unix market.

Compatibility with the Q bus will be an important selling point, because there is a large number of compatible peripherals on the market. Schlee admitted that the LSI-11 is slightly old technology, but said: "It is standard and well proven. It might be old, but we think it's still got plenty of life."

Darkcrest, the DEC systems house, will distribute and support the IS-68K. Roger Box,

Darkcrest's technical director, said that the company was going to release a range of products based around the board.

Darkcrest will also supply some technical support.

Box said: "I think the selling will work both ways, with Root and Darkcrest getting business for each other."

Although the major distribution role will be satisfied by Darkcrest, there are a number of software houses interested in using it to build their own systems.

The board costs £2,995 and fully supported multiuser Unix costs a further £1,500.

Root will shortly be adding word processing and accounting packages to its range of languages and applications software.

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SALES BRIEF

Agriculture council's £3m for DEC

DIGITAL EQUIPMENT has won a £3 million order from the Agricultural Research Council for a central system based on the Vax series. The system will be installed at the council's new computing headquarters in Harpenden to link 30 research institutes throughout the UK which until now have used isolated minis and micros.

The order has come at a good time for the company, helping to revive flagging corporate morale after the recently announced slump in profits following 10 years of continuous increase.

Geac goes Dutch

GEAC COMPUTERS, the Canadian specialist in computer systems for libraries, has celebrated the opening of its European office in Amsterdam with a big order for a public library system from a Dutch company. Geac has a wholly owned UK subsidiary which has sold library systems to the British Lending Library and many public libraries.

Students' boost

US ELECTRONICS group Harris continues its UK revival of sales with a £175,000 order from Slough College. The company will supply an H800 computer to work beside an existing H500 installed three years ago, to enable an extra 34 students to study for the Higher National Diplomas in computer studies and computer technology.

Council contract

MICRODATA Information Systems has added to its tally of over 100 minicomputer installations for UK local authorities with a £190,000 order from Anglesey. The order specifies the Reality system with eight terminals, five printers, 256 Kbytes memory and 125 Mbytes disc storage.

\$15m agreement

MICRO Peripherals of the US has taken \$15 million of orders under a five-year contract with Burroughs. The agreement specifies three models of double density disc drive: the 250 Kbyte Model 51 single-sided drive, Model 52 for 500 Kbyte double-sided storage, and the Model 92 one Mbyte double-sided version.

Bank order

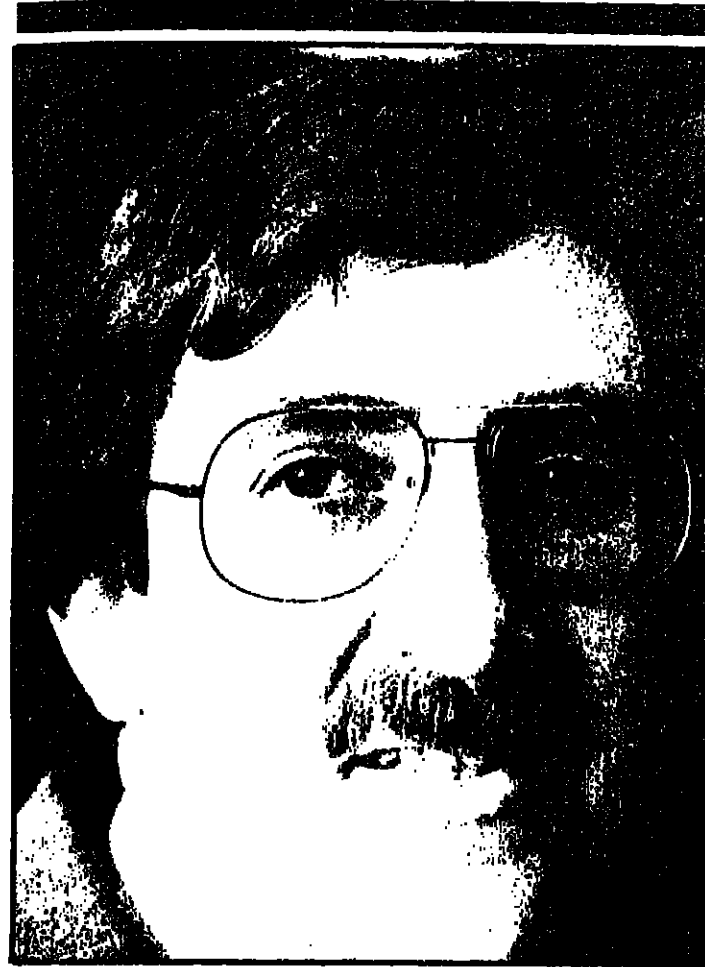
RACAL MILGO is to modernise the Bank of Ireland's data processing facilities. The system will be installed in phases at the bank's Dublin headquarters with access to a DEC Vax 11/750 machine.

Bureau replaced

DATA GENERAL has installed an Eclipse MV 8000 mini to replace a bureau service at Walsell-based Crabtree Electrical Industries, which makes electrical circuit accessories. The computer will be used to host a large manufacturing control system.

Dual system

TOP UK air freight agent Jardine of Feltham, part of the Far East trading group Jardine Matheson, unveils the first phase of a £1 million ICL dual 2957 system next month. It includes £99,000 worth of real time accounting programs from Northern Software Consultants.



KORNSTEIN... "Not so sophisticated as Lisa's icons."

Tops students prosper

by George Black
THE Manpower Services Commission (MSC) wants to bring computers into its new youth training scheme, according to chairman David Young.

"I won't be content until we're using this technology for the scheme," said Young at an open day for Datasolve's Project Author, an MSC-backed plan for producing writers of computer-based training programs.

He stressed the benefits it could bring to the unemployed in rural areas who have so far been less

able to benefit from government help.

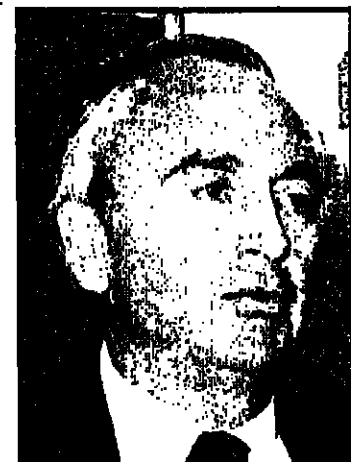
Thorn-EMI personnel director John Richards said computer-based training had a vital contribution to make in reducing the level of young people out of work, which was "the biggest blot on our society".

Project Author's first 12 graduates look like being snapped up by industry in November. They are the oldest and most highly qualified Tops trainees in the country: aged 25-45 they include two MAs and a PhD, yet they were mostly out of work before the six-month course.

The graduates will be the most expensively trained at over £10,000 each. Most had previous teaching experience, but no computer knowledge.

"Computer people don't make good authors, they're too blinkered," said one student, Frank Jones. He has been working on a problem submitted to the organisers by the London Borough of Ealing on how to train clerical staff to deal with general public inquiries by using a terminal.

The first 12 graduates, who were chosen from over 400 applicants, will not have to shop around for a job like most Tops trainees as the course is almost the only source of authors.



YOUNG... Stressed benefits.

Praise for generators

by George Black
SOFTWARE applications generators get a cautious endorsement in a new official report from the Treasury's Central Computer and Telecommunications Agency (CCTA).

The report, by consultancy DMW's Ed Dee, confirms that generators "can achieve very significant savings in program development and maintenance time and cost".

But it warns that users had referred to poor performance in a production environment, the difficulties of creating complex reports and of choosing the right type of tool for the job. Some had ordered file maintenance packages when they wanted full applications generators.

Reactions from users were almost without exception favourable, according to Dee. Getting the right database management system was just as important as a generator when there was a significant data handling content, he added.

Dee's survey does not recommend or reject any specific products, but discusses in detail various features of 22 software

systems available. They include IBM's ADF, CMC's ALL, Information Builders' Focus, Burroughs' Linc, Cincom's Mantle and Adabas's Natural.

The comments suggest - predictably enough - that documentation is the area of most general weakness. For instance the remark attached to Cullinet's ADS-Online - "reasonable for skilled readers" - is paraphrased for a number of other products.

And the widespread claims that generators can be used by staff with no computing expertise are not endorsed here. Dee, for example, is described as "not an application generator - a programmer's tool only, but a good productivity tool".

Focus is said to be "mainly a reporting and an enquiry facility - but powerful enough to write general purpose applications". On ADR's Ideal, Dee again picks his words of praise with care: "appears to be a very well designed product from the point of view of obtaining good productivity from professional programmers".

Digital presents its common VIP

by Claire Gooding
THE wraps came off Digital Research's VIP last week, when the company famous for CP/M promised to bring computing to the masses.

VIP, as predicted in *Computer Weekly*, is a cheap user-interface, which aims to spread one common command structure across as many hardware and software environments as possible.

The strategy centres on the learning language DR Logo, used with personal CP/M and the VIP control software, which displays several functions on screen. The products will be bundled with applications, and the low cost - predicted at around £10 a copy - passed on to end-users.

"We use ideas from Xerox's Star, along the lines of Lisa's 'icons' but not so sophisticated," said Howard Kornstein, European director for technical support.

"VIP uses pictorial metaphors and animation which is matched to

the capabilities of its target systems, and here we're talking about 50Kbyte systems with the minimum of disc space - not 500Kbyte systems in the upper range," he explained.

Digital Research stresses that VIP's aims are very different from those of Lisa. "Such systems are not only expensive but very restricted: Lisa is far from being a portable environment," said director of European operations Paul Bailey.

"The whole idea of VIP is to be an open system, which can integrate many applications under one structure. It should open up computing to a whole section of people who thought that computers were too difficult for them to use."

VIP is aimed at the ever-growing personal business sector. Its typical user is seen by the company as "the newsgroup who kids play games on the machine at weekends, but who wants to get a return on his investment by using

the thing to run his business on Monday."

In action VIP is more of a split-screen facility than a true window system, using fairly rudimentary graphics which depict filing cabinets, drawers, folders in the drawers, and finally, pieces of paper.

Though not stunning graphically, the limitations are deliberate, as the simpler the system, the easier it is to port across various machines.

To show that it is serious about the mass market, Digital Research has set up a new consumer products division, headed by Kenneth Harkness, former president of Atari's Arcade division.

VIP's efforts to become the lowest common denominator of personal computing depend largely on its portability. It sits on top of the Personal CP/M operating system, designed to be put on ROM, and bundled into cheap applications products.

Newbury creates jobs in Staines

by John Riley
MAJOR UK peripheral manufacturer Newbury Data Recording is to recruit 130 assembly staff this month for its new printer factory in Staines.

The factory will manufacture Newbury's new 8850 twin nine needle headed 480 characters per second dot matrix printer, which was launched recently and which already has a fat overseas order book.

"We will be working at full stretch over the next two to three months assimilating them all," said John Pether, Newbury's international marketing manager. According to Pether, the company is on track for a turnover this year of £42 million, of which about 40% is exports mainly to France and Germany, via its subsidiary, Data Recording Instruments.

The company currently employs about 750 staff and is "currently enjoying a growth rate of 50% a year". About a quarter of its production is disc drives, VDUs, which are made in Newbury, account for about 16% of production and printers about 32%.

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NOMINATIONS now are being accepted for two major awards for the UK computer industry. Awards for "Systems Innovation of the Year", to be sponsored jointly by the National Computing Centre and *Computer Weekly*, and "Newcomer of the Year", sponsored independently by *Computer Weekly*, will be given under the Recognition of Information Technology Achievement scheme (Rita).

Nominations in each category will be presented to a distinguished panel of judges, with the winners being announced at the Rita awards dinner in Birmingham on January 17, 1984.

The ground rules for nominations are simple. Select your choice for "Newcomer of the Year", or "Systems Innovation of the Year", or both, and complete the form below. A separate entry should be made for nominations in each category.

The award to "Newcomer of the Year" will go to that start-up computer company which the judges think best exemplifies how the UK can remain a force in information technology markets.

The company will have been in business less than two years as of the time of close of nominations on

September 30, 1983. Judging criteria will be relatively open-ended, but can include: financial performance (where available), market penetration, employment opportunities, innovation, and initiative and imagination.

The company must be of UK origin, and should be involved in the provision of hardware, software, or services to the information technology market.

"Systems Innovation of the Year" will be awarded to that complete system, component, peripheral or part of a system which is judged to be the most outstanding example of achievement in the field of information technology in the UK during 1983.

The equipment or systems must be available in the UK during 1983; and the innovative element in the system must be wholly or predominantly of UK origin. Software alone and word processing or office systems are precluded as these are covered by other Rita awards.

Companies or individuals cannot nominate themselves. Members of the staffs of *Computer Weekly*, the National Computing Centre, and Clapp & Poliak may not enter.

In each award category, a case of

wine will be awarded to the person who first nominates the ultimate winner. In addition, the first person in each instance who nominates one of the two runners-up will also receive a case of wine.

Nominations should include a short statement explaining why the company or individual should be judged the "Systems Innovation of the Year" or "Newcomer of the Year". Nominations must be received by *Computer Weekly* before or on Friday, September 30, 1983.

Judges for the Rita awards 1983 are: Doug Eyskens, director general, Computing Services Association; David Pirbright, deputy president, British Computer Society; David Fairbairn, director, National Computing Centre; Ted Cluff, secretary general, Institute of Data Processing Management; and Dr Paul Freeman, director, Central Computing and Telecommunications Agency.

There are six other Rita awards in addition to those sponsored by *Computer Weekly* and the NCC: Software Product of the Year; Office System of the Year; Supplier of the Year; User of the Year; Personality of the Year; and Best User's Training Method of the Year.



I wish to make a nomination for the Newcomer of the Year/Systems Innovation of the Year award. (Please delete where appropriate. If you wish to nominate in both categories, please photocopy this form.)

My name _____ Job title _____

Company _____

Company Address _____

Telephone _____

My nomination is (Newcomer or System): _____

Company Address (full postal address if possible) _____

I attach a short statement explaining why my nomination should win.

Signed _____ Date _____

Return this form, to arrive by first post September 30, 1983, to: Linda Allen (Rita Awards), *Computer Weekly*, Room L218, Quadrant House, The Quadrant, Sutton, Surrey, SM2 5AS.

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Games help maths standards

by Caroline Burgess
COMPUTER games are helping to raise the standard of mathematics learnt in schools. Enthusiasm for the games is leading children to enjoy the subject.

These are two of the observations made in a discussion paper released this month by the Department of Education and Science. The paper is the result of a 12-month survey on the impact of the microcomputer on the teaching of mathematics.

The enthusiasm of the schoolchildren, shown by their arriving at school before it opens and having to be told to leave by caretakers at the end of the day, is not limited to any particular age group. But it is greater among boys than girls.

The paper urges schools to build on this willingness to work and bridge the gap between games and the more formal parts of mathematics teaching. It says games provide a strong initial motivation, which can bring about a combination of competition and collaboration between pupils and provide a route to more academic activities.



DAVISON... Responsible for retail strategy worldwide.

ICL opens retail business centre

by John Riley
ICL launched a fresh offensive into vertical markets when it opened its Retail Business Centre at Bracknell last week.

The new strategy involves concentrating all personnel connected with a defined market into one location — the first being this new centre to specialise in the retail trade.

The Retail Business Centre, set up in a new building at a cost of £5½ million, houses over 200 marketing, development, software and support personnel in one new division. It is headed by John Davison, who is responsible for ICL's retail business strategy and products worldwide. Previously his 200 staff were spread out in six divisions in nine locations.

"We are bringing all the people concerned with the retail trade together, so we are now rowing the boat in the same way," said Chris French, director of ICL's Distributed Systems Development Division, to whom Davison reports.

French added that the Retail

Business Centre was a "prototype".
"Signs have been positive so the next unit should be set up in about two to three months' time — we are working on other units," he said, although he would give no further details.

Retailing was chosen first because ICL has, according to French, a "long tradition of servicing the retail industry, with £350 million installed sales worldwide". He expects a further £100 million to come from that sector this year.

ICL also launched two point-of-sale terminals, which can be programmed in CIS Cobol, and software to link them into DRS in-store processors. All are available now.

"The unusual step of using Cobol gives more independence to the users," said Davison. In the pipeline are a point-of-sale scanner for supermarket checkouts, and four pilot electronics funds transfer systems to be tested in 1984.

Referring to electronic funds transfer, Davison said: "There are

some issues to be resolved, ranging from response times in the new work through to customer and retailer acceptability — which date has not been universal good."

The third piece of hardware launched last week for the retail industry was an intelligent standalone workstation, the Optic Selection Terminal (OST). It is designed for the retail trade with 255 pressure sensitive key points on keyboard for entering items, stock ordering, tele-sales and ordering, and other applications.

The OST, which has an entry price of £3,500-£7,000, is resistant, "so if it is used in public for example, beer and bread won't clog up the machine", said R. Hawley, marketing manager for the Retail Business Centre, who was until August 1 director of retail systems in the UK for NCR.

ICL is aiming for the large company accounts with its retail systems rather than the smaller retail businesses.

Report shakes up US

by Caroline Burgess
NEXT to a nuclear explosion the biggest threat to computer systems in the US comes from earthquakes.

This is one conclusion of a report "into possible threats to the American computer society."

"Natural catastrophes are generally localised — at worst regional in extent. They may damage computer systems and temporarily interrupt services, but planned recovery can be rapid," says the report.

However, the large concentration of computer users and manufacturers in Silicon Valley south of San Francisco are located between the two major earthquake fault lines on the West coast.

"The economic impact of an earthquake to a company, the State and even the nation could be substantial", is the opinion of one engineer from a California Institute of Technology.

*Resiliency of the US Information Society. Tarn, Novotny, Goughly, Sibley and Ware. Published by AFIPS Publications.



Voras, the new computer-based map display system.

Adjusting maps on the video

by Nuala Moran
MILITARY strategists can throw away the maps and pins. Marconi has just released a system that generates a map display which can be overlaid with information on the current situation on manpower, vehicles and stores.

The system is called Voras, which stands for video overlay resources availability. It is based on a

combination of a micro and a video, with software developed by Marconi. It produces a detailed map background in full colour, with computer generated graphics overlaying it.

According to Marconi, although other systems can produce this type of display Voras costs one third the price of other systems. And the company claims its system is much more flexible than others.

Output can be displayed to more than one user at a time, or can be used to drive a video projector for large screen display.
Functions and command can be selected via a remote keyboard, and there is a joystick controlled cursor to manipulate the overlaid graphics. The scale of the map display can be altered, and photographic material or computer generated imagery can be retrieved and displayed.

Civilian as well as military applications are foreseen for the system. It was on show recently at Amber '83, the ambulance authorities exhibition.

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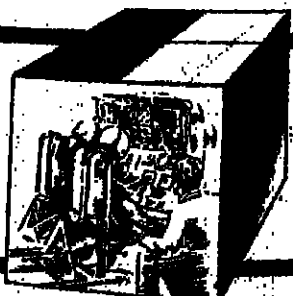
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SIMULATION



SEE PAGE 47

despite the prospect of a... of 14 million tonnes there was no... Europe.

(continued from page 17)

terms of the most integrated product that we evaluated, this accolade must be given to Data General's CEO (Comprehensive Electronic Office). CEO integrates word processing, electronic filing, electronic mail, administrative support, calendar management and decision support, all in the one package. We were also

impressed with the integration of office automation and data processing. These environments on most systems are separate and divorced from each other, but Data General has integrated them to a remarkable degree.

Another new development is the CEO Document Exchange Software. Data General now

offers users with existing Wang word processing systems the facility to integrate these with its own CEO systems. The software translates the editing codes of documents into a compatible format and transmission of the documents between the two systems is through a bisynchronous connection.

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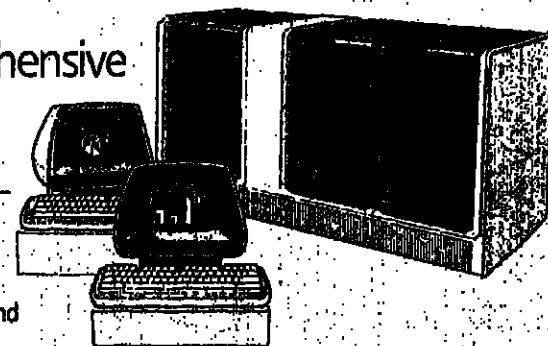
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CARPENTIER... Wants ideas for his 10-year project.

European Commission puts out call for computer ideas

Good hopes for Esprit contracts

by John Riley

THE European Commission wants some ideas. It has put out a call for them from European data processing companies as it finalises the work plan for its 10-year, £937 million Esprit project. The project is well on track for gaining approval and cash by December, despite the EEC's financial crisis, it was learnt last week.

Michael Carpentier, director general of the Commission's IT task force, and boss of the Esprit programme, aims to put out a call for contracts at the end of 1983 or early 1984 and has organised workshop meetings in Brussels in October and November to discuss plans with companies in detail.

"We envisage a two-phase approach," he said. "During the first phase we are inviting written con-

tributions to help us arrive at a comprehensive and coherent set of objectives for discussion in the workshop meetings."

Separate three-day workshops have been arranged on microelectronics; software technology; advanced information processing; office systems and computer aided manufacturing.

A major problem for long-term Euro-proposals such as Esprit is that the Euro-budget works only on an annual basis, the year's allocation being decided in the preceding December. The Esprit project has been earmarked about £28 million for 1984 in the draft budget, which will be debated next week.

A spokesman for the European Parliament said last week that, despite the financial crisis the

European Commission is facing, the Esprit budget should not be affected. "There is a squeeze on right up to our spending limit and we might have to grab money from elsewhere to pay for the farm expenditure, but the Esprit money is a small sum and should go ahead," he said.

Since its announcement last June, the Commission's proposal for the Esprit project has been studied by the Energy Committee of the European Parliament. A draft report has been drawn up for debate and is expected to be adopted by the committee at the end of September.

The full proposal, with amendments, is likely to go before the European Parliament in November, and to be passed by the Council in early December.

Quorum's LAN now available in the UK

by Caroline Burgess

QUORUM Computers has launched its latest product Q-Lan, a micro network, in the UK. Based on Quorum's own LAN (QuorumNet) it will support up to 64 workstations over a distance of 1km, while offering each user CP/M operation and access to 340Mbyte storage.

"The standalone era is finished in small businesses. Now people realise the benefits of micros they want more," said Martin Willard, marketing director of Quorum. "Minis and mainframes are too expensive for small and medium-sized businesses."

"Q-Lan is not a totally new product; it is based on technology developed in 1980, and has been tested in Europe since April," said Alan Brown, Quorum's managing director.

An 8-bit dual processor provides 128 Kbytes of memory at each workstation. One processor is used to run CP/M; the other gives network and local cache memory facilities, leaving 60K for running CP/M. A coaxial cable links the processors to the mass storage unit.

A Q-Lan system giving three terminals costs about £12,500 to install. To expand the system costs about £4,000 per workstation. So far, only four have been sold.

Quorum plans to introduce a 16-bit processor by the end of the year. "We are aiming at the second-time user and the medium-sized company wishing to step up from standalone," said Brown.

However, QuorumNet does not allow any type of microcomputer to be attached to it. "We don't



BROWN... "Don't mix - change"

want that," commented Brown. "When you start mixing systems is when you get problems. We would advise people to change their micros."

Quorum plans to sell its products through distributors and OEM dealers expect to announce two deals shortly - one with a large distributor; the other with a microcomputer manufacturer.

Established in 1979 as Q1 Europe the company was bought out by its management earlier this year. In 1980/81 it was losing about £2 million a year. But it hopes to break even by 1984.

In 1981 Quorum made half its staff redundant and dropped out of developing application software and after-sales service in an effort to become profitable. It now has a staff of 40 and a turnover of £1.4 million a year.

Disaster service for Vax users

by Philip Hunter

THE UK's first disaster recovery service for users of Digital Equipment's Vax minicomputers is available in London and the Home Counties from Steiger Software. It will operate in a similar way to services for IBM mainframe users: customers will be offered guaranteed access to a Vax computer when their own fails.

Steiger has installed two Vax 11/780 systems, top of the range models, at a cost of £5 million. One of the computers will be for the disaster-recovery service; the other for in-house software development.

Up to 20 customers will be able to use the service, each having a guaranteed slice of the computer's time. The service will also include keeping and regularly updating duplicate copies of the customer's database.

The customer will pay between £10,000 and £50,000 a year for the service.

BR seeks an IT supremo

BRITISH Rail wants a computer supremo to co-ordinate its computers, telecommunications and microelectronic equipment.

Last week it placed an internal advertisement for the newly created post of Director of Information Technology. A British Rail spokesman said: "We have computers spread throughout the organisation... the new director will be concerned with computer applications for specific purposes."

VDU operators have a glaring problem.



Polaroid CP-70 Contrast Enhancement Filter

Document 1464A. Now on Page 1 Line 20 Position 2

The text on this screen is sharper, clearer, and easier to read.

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Alternative solutions aren't so effective. Tinted glass, for instance, doesn't stop glare completely. Etched screens reduce sharpness and fail to improve contrast. And a massive office overhaul of lighting, walls, and windows causes unnecessary downtime. Besides costing a fortune!

Fortunately, Polaroid have come up with the clear answer.

Each year the number of people using Visual Display Units increases.

And, each year, so do the problems which VDU glare causes. Studies have shown that over 80% of operators suffer from eyestrain, which, in turn, leads to tiredness, careless errors and lower productivity. It also increases absenteeism.

However, Polaroid have found the answer. The CP-70 filter. As you would expect from a company of Polaroid's reputation, they haven't just reduced glare, they've eliminated it. The CP-70 filter comes in a range of sizes which fit easily onto every type of display terminal. And once one is fitted, it should never need changing.

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DR. TONY JUBB, MANAGING DIRECTOR, PLANT SCIENCE LTD.

When Imperial Biotechnology was set up it broke new ground in co-operation between universities, financial institutions and industrial enterprise. 3i Ventures initiated this as a joint venture with Imperial College, provided the initial investment of £400,000 and helped to identify the founder management team.

DR. TREVOR LANGLEY, MANAGING DIRECTOR, IMPERIAL BIOTECHNOLOGY LTD.

We had an immediate rapport with the people from 3i Ventures. They not only understood our technology but they also saw its commercial potential. They quickly became actively involved in the business and played a key role in introducing us to potential business partners in the U.S.A. 3i Ventures' financial and commercial know-how and real understanding of what makes high technology business really tick is invaluable.

PROFESSOR STUART RAMSDEN, CHAIRMAN, LASER APPLICATIONS LTD.

3i Ventures' capital investment and active participation added a new dimension to the way the company could be managed. They brought to the table a wide range of contacts, an understanding of the need to react quickly to business opportunities, and most importantly the ability to complement the skills required to move high technology into very competitive markets as has been achieved with robot sales into North America and Japan.

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Following the first two years of successful and profitable operation - largely in export sales - 3i Ventures played a key role in arranging for a public offering of 10% of the company's shares through the New York "over the counter" market which raised an additional \$8.8m for expansion.

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Watch out for big Brother in 1984

Brother Inc is aiming to become a major force in microcomputers and in printers . . . Kevin Cahill reports

HANOVER FAIR next year will see the international debut of Japan's newest entrant to the information technology stakes.

The company is Brother Inc, traditionally one of the world's major suppliers of sewing machines, home organs and pianos. In the UK it is best known for its typewriters.

In the spring of 1984 the world will see the fruits of five years of slow and careful change at Brother, which is aimed at making the company a major force at the micro end of the business and in computer printers.

The Hanover Fair announcement is still a closely guarded secret, but it will be an advanced, ultra-light weight micro, with substantial software and commu-

nications facilities. The local speculation in Japan is that the device will be a 16-bit machine, with an RS 232 interface, some kind of fairly substantial on-board solid state memory and up to 256K of RAM.

The emphasis in Japan is on the portability of the device.

For the past two years, Brother has been extensively involved in marketing a range of daisywheel printers - machines which, from a standing start last autumn, are now selling at the rate of 500 a month in the UK, according to Jim Cattini, the Brother UK marketing director.

But before looking in detail at what Brother is offering here, it is worth pursuing the speculation in Japan.

One of the machines which Cattini has been selling successfully for Brother is described by the company as a personal electronic printer. Basically it looks like a very small, portable typewriter - which is really what it is.

The first of these machines hit the UK last year and was a runaway success, selling for anything between £115 and £150.

That first, so-called electronic printer, advanced though it appeared, when compared with its successor was a very limited device, though reflective of one of Brother's main product lines - typewriters.

It contained a total of three small microprocessors, which drove a dot matrix printer, working at 17 cps, a sophisticated



CATTINI . . . "Last month we sold more than in the whole of last year."

keyboard with three shifts on it, giving the user access to all common European characters including Greek, Aramaic and Russian, as well as the common upper and lower case options.

In addition, the EP20, as that first model was called, had a 16 character screen, which held the 16 last characters typed, allowing a user to insert, delete and amend prior to executing the print. Apart from other standard type-

writer facilities like the tab set and clear, the EP20 came with a full printable calculation facility.

The little printer, almost silent in operation and ideal for use on trains and aeroplanes, worked either via a 20,000 character carbon ribbon or directly on to thermally sensitive paper supplied by Brother.

The printer takes ordinary typing paper, but the quality of print is sensitive to the quality of the paper, and for best results shiny paper is recommended.

The print head and rollers were at first too fine to allow for copies, though that is a problem which has now been remedied.

For all but the most naive, the writing was on the wall - especially upon inspection of the motherboard, which took mainstream componentry as opposed to the components themselves, to new levels of compactness. Here, surely, is the predecessor of a true portable computer.

The Brother engineers at Ngoya City, south of Tokyo, certainly thought so because, with no increase in weight or power consumption, the EP22, retailing for around £200, took the whole process one stage further.

The EP22 is physically similar to the EP20, except for a glamorous black finish to the bodywork. It still weighs just four pounds and runs for anything up to 14½ hours of continuous operation off the same four 1½ volt batteries.

But the machine is now much closer to its eventual destiny as a portable micro. There is now 2K of RAM aboard, as well as a 232 interface and 32K of ROM. The 2K of RAM will hold more than a page of A4, allowing pages to be copied by being re-run, and allowing the same page to be transmitted either to another micro or another printer.

The second major innovation on the EP22, although bound by the 16-character screen, is that there is now an effective "fourth shift" on the keyboard, giving access to a wide range of word processing facilities.

The only problem facing the Brother engineers at this point is the screen and the memory. The tiny motherboard is crowded already with three microprocessors, but there are solutions around the corner. Brother is known to be experimenting with both bubble and other solid state memories.

Two options are open for the engineers: one is to embed the screen in the lid of the device, as

Grid has done with its Compass machine in the US. The other is to lengthen slightly the machine and fit a narrow flat screen in place of the existing 16 character screen.

"The biggest advantage over all other machines," according to one Dutch user, "is the full A4 printer at the top."

The EP22, the same as its predecessors and in line with the likely micro successor, has the same 9in thermal dot printer at the top of the machine. This enables a permanent, full sized record to be taken of any transmitted copy.

While the EP20 series is the focus of interest to personal computer buffs, the mainstream of Brother's thrust into the information technology market is being developed behind two of the company's main daisywheel printers, the HR1 and the HR15.

Brother began selling the range in the UK last August and Cattini proudly notes that last month, normally a quiet period, the company sold more machines than in the whole of last year.

Growth so far this year is at a rate of 227% per annum and Cattini says he is planning to double that in next year's budget.

Most of the selling has been done via a fairly small but rapidly expanding chain of dealers so far, but the big deals are beginning to appear.

In France Cii-Honeywell Bull uses Brother mechanisms in its machines, but it is in the US, where Brother is pitted against arch rival NEC, that the real battle is being fought. Brother is believed to be in detailed negotiations with most of the major US manufacturers, including DEC, Wang, Prime and even, it is rumoured, IBM.

The HR15 is a letter quality daisywheel printer with RS 232 and Centronics interface and a print speed of 13 characters per second. It is driven by software which took 10,000 man hours to prepare and, as well as the usual micro, has 32K of ROM on board, up to 4K of which can be used by Brother engineers in the UK to modify and amend the machine.

The printer comes with the usual options of a formatted and tractor feeder for data processing runs, but in addition the HR15 has a fully qwerty keyboard which converts the printer directly into a typewriter, with memory and other facilities, and all for a recommended price of £500. (The keyboard is about £150 extra.)

When it comes to speed claims, Cattini gets a little exasperated: "We use Shannon text, a strenuous test of wheel selection as well as carriage motion and line spacing. We just wish everyone else did as well."

The story Cattini recounts to point up an abuse is about one of the company's own dealers in the US which advertised the HR1 as 200 cps in "white space mode."

"White space mode," Cattini notes, "means paper movement only."

While statistics are hard to come by in the UK, in the US market research group Dataquest has done a study which shows that at the micro store level printers account for 20% of all sales.

According to the Dataquest survey, the most frequently mentioned letter quality printer was NEC's, but after only a year's marketing in the US Brother's had become the sixth most frequently mentioned printer, with over 20% of all would-be purchasers enquiring about the machine.

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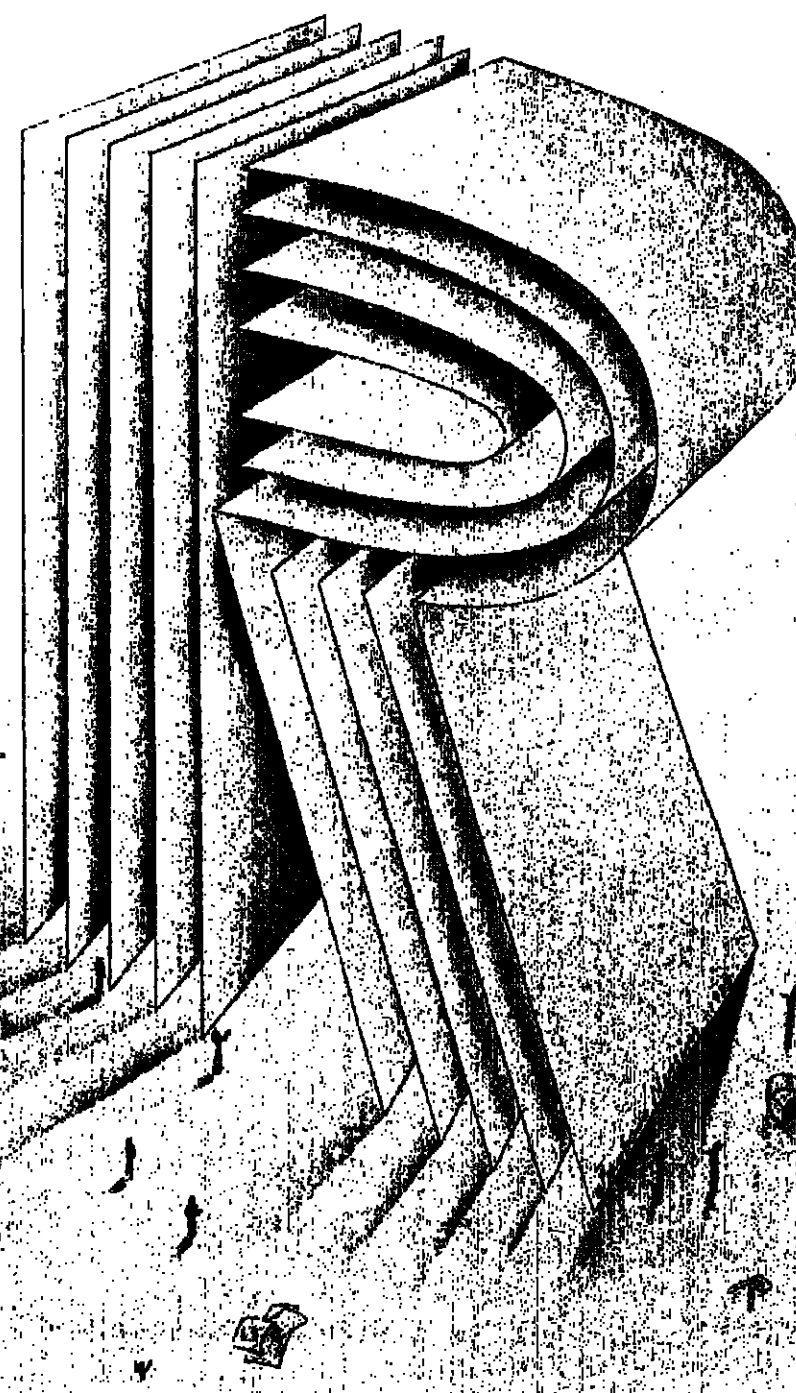
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Price-cut brings Pascal to masses

by Claire Gooding

THE price tag on Oregon Software's implementation of Pascal is to be cut as part of its push into the 68000 Unix market. Oregon's Pascal II already has a wide following, as it was adopted by DEC for its kit, but with the arrival of cheaper 68000 machines — down from about £3,000 to £1,000 or less — Pascal II is heading for the mass market.

"One of the problems with the 68000 is that there is no software for it," said Philip Lingham, marketing director of Unit-C, the company selling Pascal in the UK. "Unix is the coming world, now that there are machines large enough to run it without being brought to their knees. Since the OEMs supply the boxes without the software it's up to us to surround them with the right software tools."

Software File is compiled by George Black

Micro predictions split

TWO front-runners of database design are taking very different views of the future of micros.

Mathematica, owner of the Rumis-11 English-like database manager, is counting on Motorola's 68000 chip for its long-term development and is preparing a version to run under the Unix operating system on that processor.

But its main rival, Information Builders, is betting that the Intel-based IBM-PC will be dominant for a long while, and is therefore concentrating on pushing the new PC version of Focus.

Mathematica's UK sales manager, Andy Wilder, said he believed the 68K chip was "where it's at" and it was this market it would be principally addressing. He would not say if the company had any plan to attack the PC territory.

However, Information Builders' British managing director, Peter Scawen, said it had already made nearly 600 PC-Focus sales worldwide and that clients were now talking of ordering it "in hundreds of copies".

The two organisations have been

developing side by side in the IBM mainframe software market since Gerry Cohen left Mathematica to found Information Builders in 1975.

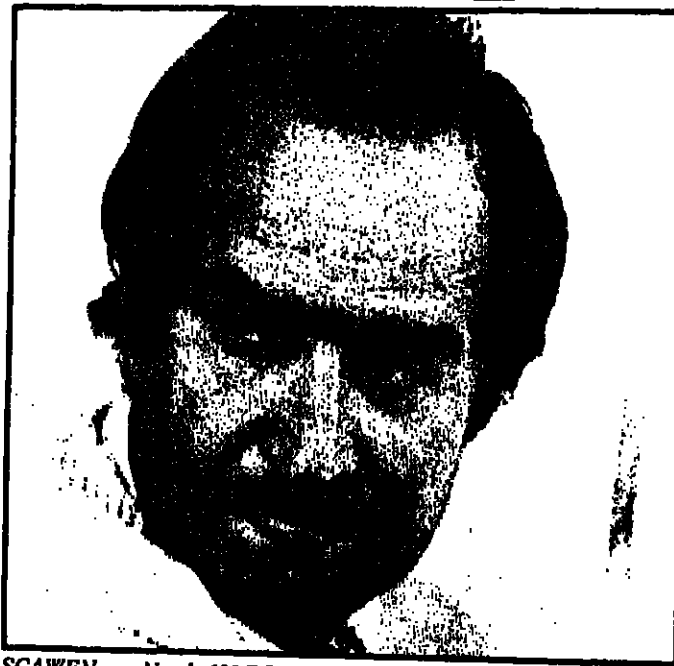
Mathematica turned over \$36 million last year, but its offshoot seems to be gaining ground and achieved \$20 million.

Both have strong user bases among multinationals and public services, most of which evaluate both offerings before a purchase.

Yet 90% of sales, said Scawen, were still to concerns with no previous investment in what IBM calls the information centre. Even the largest companies, which have had systems handling volume transactions for junior managers, have been slow to see the importance of decision support for their bosses. For these they have used the bureaux — like Tymshare, Scawen's former employer.

Now the top Times-listed firms have to consider a third option, Nomad from CSS, released from its bureau form and packaged. And late next year IBM itself will weigh in with DB-2 threatening all the smaller vendors.

Mathematica was taken over by Martin Marietta in June, having



SCAWEN... Nearly 600 PC-Focus sales worldwide.

turned in a third-quarter loss in the wake of heavy discounting. Now it has access to huge funds for research and a sister in Hoskyns

to undertake joint projects. CSS's parent is Dun and Bradstreet, which means it has a cash pile at its elbow.

Architect beefs up computer operation

by Claire Gooding

THE Ove Arup partnership, the architect responsible for some of the world's most unusual buildings, is beefing up its computer operations.

The move to strengthen its computing arm, Oasys, set up in 1979, comes after a review which indicated the firm was missing out on a potentially huge market for its software packages. Oasys will now sell the architectural and draughting packages developed at the Arup through agents.

"It's difficult for a professional company to operate in such markets, because of the limitations imposed by professional bodies," explained Ove Arup's technical coordinator, Dr Michael Price. "Employing agents to do the marketing on our behalf was one way of maximising the benefit from software. These applications are well-proven and in demand throughout the industry."

Oasys has appointed agents in Liverpool, Loughborough, Croydon and Wimbledon, the latter being Integer Software, a software house set up by ex-Arup staff to press to deal with architectural packages.

Integer will sell Arup's Hewlett-Packard based packages, while the Cadraw system, based on ICL's Perq kit, goes to Maxicomp. The structural engineering software is split between two firms, Strucon for DEC users and GECS of Liverpool for Data General kit.

TI has Cobol program generator

US HARDWARE maker Texas Instruments has a new Cobol program generator, derived from System 80, written by Phoenix Systems of Pittsburgh, Pennsylvania. TI claims users do not need to know Cobol as it communicates in English. Its output runs under several operating systems, including CP/M-86 and MS-DOS.

Secure in Japan

UK BANKING expert Arbat has got a foothold in the Japanese market with the installation of a DEC PDP-11/44 system for securities firm Nomura in its Hong Kong office. Arbat, which has been marketing its Series 700 software from Hong Kong and Singapore, now has the advantage of the offices of its new parent, CDC, in Japan.

Lex supply

BLEASDALE Computer Systems, maker of the 68000 chip micro running under the Unix operating system, is now supplying the Lex word processor from Ace Microsystems. Bleasdale has also recently adopted the Dyalog APL language from Dyalog Systems of Farnborough.

Condor launch

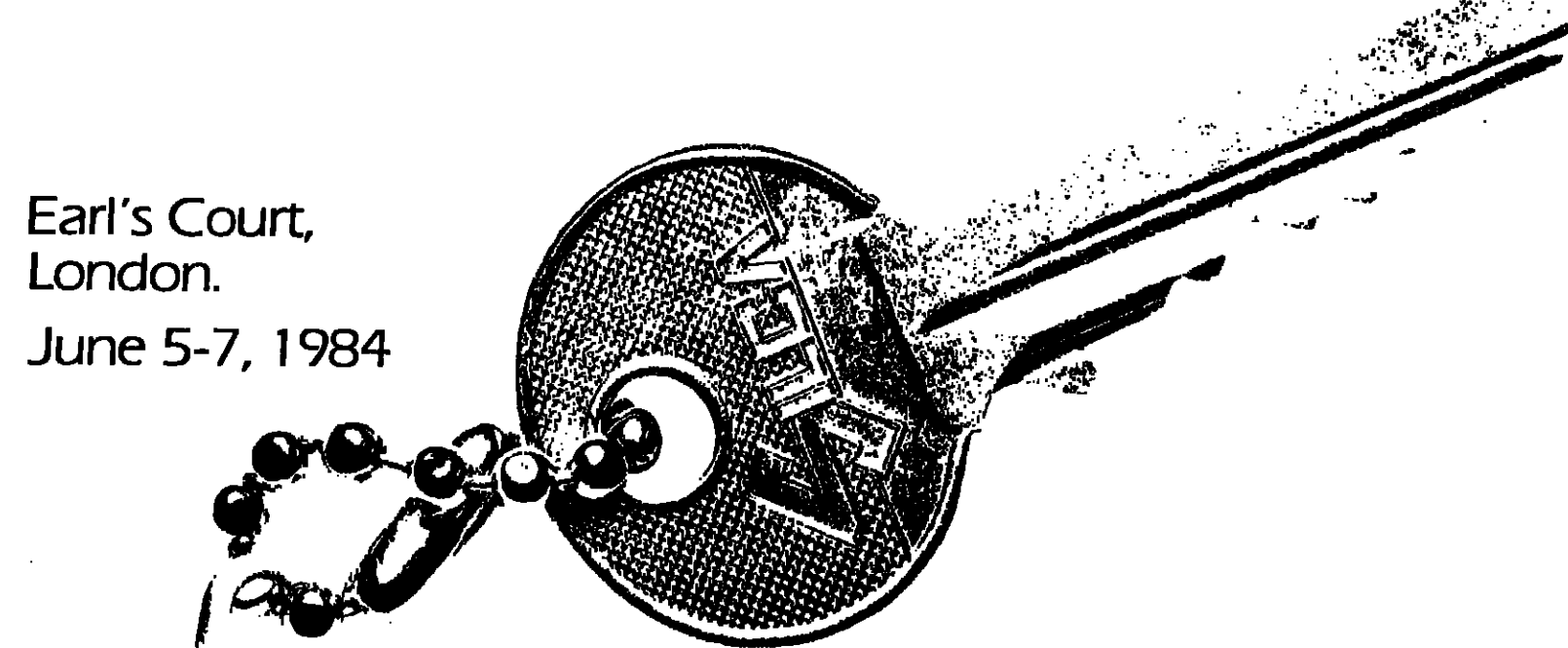
THE Condor relational database management system sold in the US by DEC and Hewlett-Packard on their micros, has been launched in Europe by MOM Systems of Aberdeen. Condor runs on most 8-bit and 16-bit micros, including the Sirius, IBM-PC and Apple.

Bugs wanted

A DATABASE of bugs — the micro-organic sort — is being planned by the Department of Trade and Industry. It wants to computerise records of national collections of cultures. The laboratory of the Government Chemist is studying the feasibility of setting up the service.

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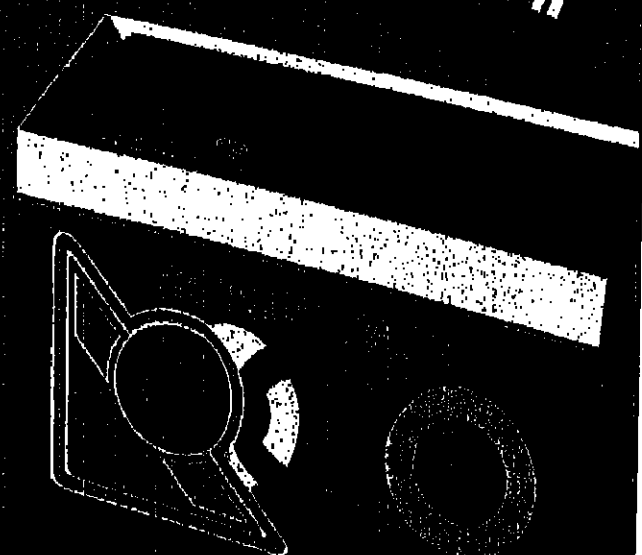
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CD CONTROL DATA

COMPANY NEWS

Booming bureau sells use of micro

by Kevin Cahill
NMW, the small publicly quoted Nantwich bureau, has sold rights to use the company's in-house micro to three other manufacturers. News of the deals broke as computer industry analysts were forecasting a record half-year for the company.

NMW, set up in 1971, specialises in the remote processing of the huge volume of transactions involved in share dealing on the London Stock Exchange.

Working from twin ICL 2972s and mostly Ferranti front-end processors and terminal equipment, NMW provides a real-time service which covers about 40% of all business carried out by brokers in London, the provinces and Dublin.

According to NMW managing director Brian Johnson, the company began working on its micro two years ago and made the first test installations early this year. The micro is based on a standard 280A with up to one Mbyte of memory and is loaded with telecommunications facilities.

Johnson defended the role of the central bureau, saying that a well-run bureau can always offer efficiencies, in terms of resources and development capability that would be an impossible overhead for a small company.

NMW operates in a market dominated by the NatWest Bank subsidiary Centre-File and the Gordon and Gotch bureau.

In the past two years NMW and the two big bureaux have faced increasing competition from Tim Simons, whose small systems house CCB offers a standalone broking package designed by the company.



HOWES... "UK growth will have to run faster than corporate growth."

Cadcentre's US Apollo mission

THE Cadcentre looks set to make a major push into the US market on the back of the Apollo Domain series of high powered workstations. Although ICL is a major shareholder in the Cadcentre, the Apollo system has been chosen in preference to the ICL Perq to ensure maximum impact in the US.

While the Perq, manufactured by the Three Rivers Corp of Pittsburgh, and the Apollo are both US machines, Three Rivers has not attained a high market standing in the US market.

The Cadcentre remains close-knit about the release of its new product, which is expected at the Design Engineering Show in October.

The link-up with Apollo should be of benefit to both companies. The Cadcentre has a wealth of software but few vehicles to sell it on; Apollo is revving up its UK marketing efforts in a bid to mirror the

astronomical growth the company has achieved since it was founded just over three years ago.

Apollo has been achieving a 400% plus annual growth rate: 1981 sales were \$3.4 million, 1982 sales were \$18.1 million, and 1983 sales are targeted to reach \$80 million. Sales for the first half of this year to July 1983 reached \$17.7 million.

Apollo plans to have 50% of its sales outside the US by 1987, according to David Howes, Apollo UK managing director. The company has to mirror the profile of large companies like DEC, he says. As a result, UK growth will have to run faster than corporate growth to bring this about.

Apollo expects to have at least 35 employees in the UK by the end of the year, up from nine at the start, says John Parkinson, marketing manager. It also plans to add two more branches to its Birmingham, Herts, base - one in

West London and the other in Manchester.

Apollo computers are not for everyone. Howes explains that the company takes a top down approach to selling, with potential customers singled out for their need for virtual memory, high quality graphics, and networking.

Apollo is not happy over a recent deal which saw Computervision sign a deal with Sun Microsystems, a start-up West Coast US company, to supply it with intelligent graphic workstations. Howes says Apollo had a "handshake agreement" with Computervision, which was reckoned to be worth \$50 million.

But when Computervision told Sun that it was the loser, Sun offered a share in its company, and Computervision went back to Apollo and said it was no longer a technical deal, but a business proposition.

Conic marketing push puts ICT in a twist

THE tangled affairs of telecoms company ICT are growing even more confused as the manufacturer of its main product begins independent marketing in Europe.

The Conic group from Hong Kong which, it is claimed, is manufacturing the device under licence from the wholly-owned ICT subsidiary, Triple M Corporation, is now mounting a major marketing effort of its own in Europe, offering the Triemco 2000 to distributors on the basis that it

is a Conic product. Conic salespeople have told potential distributors that Conic owns the product and that ICT did not pay the claimed designer SRI, for it.

Conic headquarters in Hong Kong would not answer press queries on the topic.

Cecil Kernot, chairman, and ICT are currently trying to raise more money for ICT. Kernot said that if the money was not forthcoming things would be difficult.

European companies fail to take advantage of weak US dollar

by George Black

EUROPEAN computing companies have failed to cash in on favourable exchange rates to take a greater share of their home market, according to a report by UK systems house Logica for the American magazine *Datanavigator*.

IBM shrugged off the problems of the strong dollar last year and pushed its European revenue up 10% to \$9.7 billion. Its nearest rival was Olivetti, with \$1.3 billion - and it moved up to second place only through a batch of acquisitions regarded in the industry as uninspired.

Olivetti bought the Swiss Hermes, the French Logabax and West German Data Terminal Systems.

IBM now has 40% of business included in the survey of the leading 25 hardware manufacturers. In a year in which computing struck in the doldrums, with only 6% growth, acquisitions were responsible for figures looking better than the reality. Burroughs results looked impressive - up 30% - but this included the takeover of Memorex.

The Swedish telecommunications firm, Ericsson, similarly showed a sizeable jump of 41%, but this was largely attributable to absorbing Datasab.

The league table is thus misleading about the true condition of the organisations quoted and their places in the technological hierarchy. For instance, the drop of French Cii-Honeywell Bull behind

the German Siemens could be more significant than other more obvious statistical features of the survey.

West German Nixdorf edges into the top 10 and Dutch Philips falls out; but Philips is going to be far more interested in what its

partnership with AT&T holds in store than its rank in the pecking order.

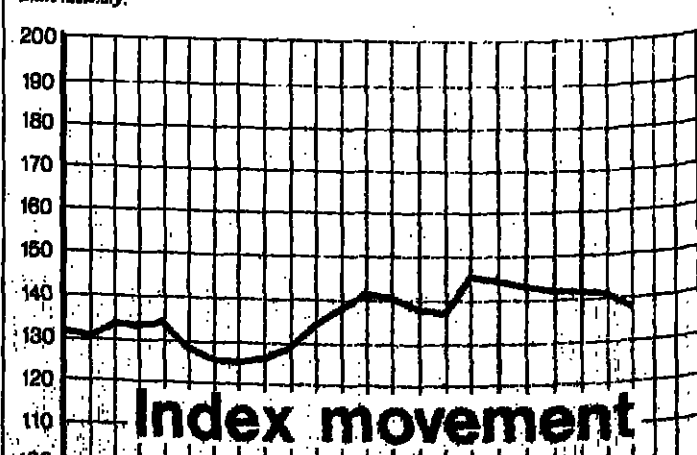
Highest growth of those firms which have not been involved in buying up others was achieved by Nixdorf and Wang, both around 25%.

SHARES TABLE

The shares table, which is specially compiled for Computer Weekly, shows selected computer companies that reflect the state of the computer industry.

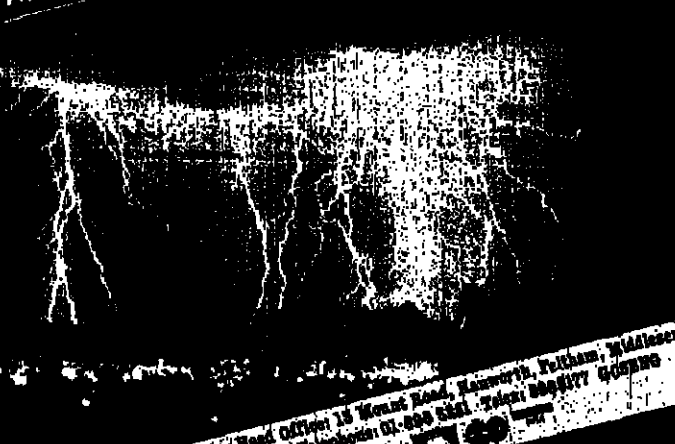
Date 8/9/83		Index 137.86		Change -2.17	
1983	1982	1983	1982	1983	1982
High	Low	Price	Change	High	Low
250	240	250	-40	250	240
240	230	240	-30	240	230
230	220	230	-20	230	220
220	210	220	-10	220	210
210	200	210	-10	210	200
200	190	200	-10	200	190
190	180	190	-10	190	180
180	170	180	-10	180	170
170	160	170	-10	170	160
160	150	160	-10	160	150
150	140	150	-10	150	140
140	130	140	-10	140	130
130	120	130	-10	130	120
120	110	120	-10	120	110
110	100	110	-10	110	100
100	90	100	-10	100	90
90	80	90	-10	90	80
80	70	80	-10	80	70
70	60	70	-10	70	60
60	50	60	-10	60	50
50	40	50	-10	50	40
40	30	40	-10	40	30
30	20	30	-10	30	20
20	10	20	-10	20	10
10	0	10	-10	10	0

The table shows the closing prices in London on Tuesday and in America on Monday. The share index is based on the prices of the UK companies in the table. Highs and Lows have been adjusted where necessary.



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MICRO NEWS

UK Pick costs less, offers more

by Claire Gooding
THE first low-cost 68000 machine running the Pick operating system was revealed in London last week by Aston Technology. Aston is planning not only to undercut other 68000 offerings but to beat competitors by offering the widest range of applications yet available for a 68000.

"One thing you can say about this machine is that there is a whole world of applications software available," said Aston's founder Graham Gough. "We are able to offer a huge selection of Pick applications, which amount to a library, as well as access to all the CP/M software on the market."

Gough and his team, five in all, left Wicat, which manufactures a Unix-based system, several months ago to set up Aston Technology, which will cut costs by assembling in the UK. "We'll be selling systems for £500 less than the IBM Personal Computer," said

Gough, "and if that isn't a breakthrough, what is?"

Aston Technology is based in the new Technology Park, which is part of Birmingham's efforts to attract new high tech industries. There, it will assemble its own-label Crystal, built around a 68000 processor board from Pertec.

It will sell Crystal in two series: the R series with RS-232 communication to other terminals, and the C series, which is a networking system using coaxial cable to link intelligent workstations.

The CPU is based on a 10 MHz Motorola 68000 processor, with 16-bit data path and 32-bit addressing. It supports up to four Mbytes of main memory.

Although the Pick operating system, as licensed by Pertec, is the main vehicle for the Crystal, Gough has hedged his bets by supplying a range of alternative operating systems. As well as the

native Crystal O/S system, supporting RM Cobol, Business Basic, and APL, the machine also runs Unix System III (an advance on most Unix offerings, which are still stuck on the previous version), Digital Research's CPM and the BOS operating system and applications from MP/SL. Support and training are handled by the various suppliers and by Crystal itself.

The choice of Pick coincides with an enormous resurgence of interest in the system. Pick deals efficiently with variable length records, using relational database techniques.

While the Pick information retrieval language English (now known as Access) provides fertile ground for applications, Crystal has gone one step further by offering a sophisticated applications generator called System Builder, from Atech System builder.

Micro News is compiled by Robert Parry



GOUGH... Undercutting other 68000 systems.

Danes aim at low end UK market

by John Riley

LEADING Danish computer manufacturer Christian Røvsing aims to break into the lower end British business market with its new 1932-bit multi-terminal microcomputer.

The company is marketing the series, called the CR32 series, as a 32-bit minicomputer, although it is based on the Motorola 68000 chip, which is not fully 32-bit, using 32-bit registers but a 16-bit databus.

The basic CPU has a 256 Kbyte memory, expandable to two Mbytes with 21 Mbyte Winchester disc. The series, which is manufactured by Røvsing in Denmark, runs the Unix operating system.

When enhanced by a 10 Mbit serial extension bus, the system can support up to 128 users, the company claims. Base price is around £10,000.

According to Steen Christensen, manager of the UK subsidiary, Christian Røvsing Systems, the CR32 series will be sold "mainly to systems and software houses."

R&D firm sells project design to Thorn EMI

by Caroline Burgess

RD PROJECTS, a small, London-based research and development company, has sold the design of its first project to Thorn EMI. The design, a robot arm and control unit, will be used by Thorn in its own range of advanced robot systems for assembly lines.

Formed a year ago by private funding, RD Projects is another attempt to bridge the gap between academics and industry. Frank Craven, general manager of RD Projects, said his aim was "to turn ideas into commercial products and to fund R&D."

All the work carried out by RD

Projects is microprocessor based. It has other projects under way in the fields of automatic control vehicles, CNC (computer numerical control) machine tools and CAD/CAM.

RD Projects, the chairman of which is Sir Hugh Ford, professor of mechanical engineering at London University, funds research work at Imperial College and employs its own staff at its base in Nine Elms.

Thorn's planned robot system will be based at Hazmac, a company it bought recently for £730,000. The first system should be available within 12 months.

Millennium for Tektronix

by Caroline Burgess

TEKTRONIX UK has lined up systems house Millennium Professional and Technical Services to boost sales of its IBE8-488 bus programmable instruments.

Tektronix found it was facing difficulties designing custom systems to meet individual needs. "We were being asked to do things beyond the scope of a manufacturer, so we decided to call in outside experts," explained a spokesman for Tektronix.

No formal agreement has been signed by the two companies. If either company is approached with a problem it alone cannot deal with it will call in the other.

Millennium's managing director, David Pearce, described the agreement as of "mutual advantage". As an independent systems house, Millennium offers a wide range of services concentrating on one-off systems to meet customers' specific needs. It designs systems, puts them together and tests them.

Vocabulary encoding service

CALIFORNIAN speech synthesis specialist Speech Plus has set up arrangements with four chip makers for a vocabulary encoding service. Speech Plus will provide consultation, voice recording and speech encoding services for American Microsystems, Hitachi, Sanyo and Signetics.

Osborne meeting

THE British Osborne Owners' Group will hold its second national meeting on September 17 at the National Liberal Club. All Osborne owners are invited to the meeting from 10am-5pm.

Hitachi delivers

HITACHI is set to deliver a 12.5MHz version of the 68000 micro processor compatible with Motorola's own 12.5MHz device. The chip's speed has been pushed up by optically shrinking the earlier 8MHz version design, and building it in a high speed NMOS process using 2.6 micron line widths.

More dealers

ALMARC Data Systems has increased its number of dealers by 13 to over 40 for marketing the Spirit microcomputer. Launched in June, the Spirit range allows the user to choose the processor to suit his application software.

Gothic offer

MOTOROLA's eight-bit MC68008, its "stripped down" version of the 16-bit MC68000 microprocessor, is now available from Gothic Crellon. MC68008 is claimed to offer the performance capabilities of the 16-bit model with the economies of an eight-bit system.

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Tony Milton is managing director of Computrans.

UK firms lag behind their rivals in export enterprise

A EUROPEAN computer publication recently reported prominently that a co-operative export venture by six French software houses has had a first year turnover of £266,000 and was expecting a revenue of \$1 million (nearly £700,000) from sales in the US in 1983.

At the same time, American hardware and software is flowing into Germany in such volume that the government there recently introduced legislation to define more clearly the great variety of computer products, Americans do not see language and distance as barriers to product marketing.

The UK is a fully paid-up member of the EEC; it is somewhat closer to Germany than the US is; and it is no further from America than France is; yet it seems to be lagging far behind its continental partners and its American cousins in its export efforts.

While US companies use the UK as a springboard to penetrate markets in the EEC, and other EEC countries export to the UK and to the US, what are UK innovators up to? Why are they not exporting more to the EEC, the US - and even further afield?

UK manufacturers of hardware and software do export their products, but they seem less aggressive in their approach than their foreign rivals.

To help UK firms in their export efforts a firm (Computrans) was launched nearly 18 months ago to provide a translation service for the computer industry. Yet, to date, it has not been asked to undertake any translation work related to the export of UK products.

Discussions with UK British companies have indicated that they have a blind spot when it comes to foreign markets. They clearly pre-



The left-wing boss who praises Tory policies

PHILIP HUGHES is a Socialist and a member of the Labour Party, but he is a strong supporter of many of the Conservative government's technology policies.

The left-wing Logica chairman admires Tory Information Technology Minister Ken Baker and praises what he has done for the computer industry. "Fortunately the government has not followed its own free market philosophy," he said. "What it has done for ICL, for the space business and the Alvey programme illustrates this clearly enough."

by George Black

But he remains severely critical of Tory educational policies: "For Stirling University to have to sell off its land to the American Wang company is just plain daft."

Hughes has climbed to the top (the firm he helped to found is now the UK's biggest independent software group, with an income last year of £33 million) without dropping his egalitarian ideals.

He came into the industry in 1961 without a computing background. His field was operational research, having studied economics and engineering at Cambridge University, with which Logica has close links.

After four years with Shell, Hughes joined CEIR, one of the first computer services companies, set up in the US in the Fifties. CEIR later changed its name to Scicon, and was taken over by BP in the mid-Sixties. In March 1969 Hughes, with Len Taylor and Pat Cohen, set up Logica, which incorporated several features of Scicon.

One was its international aspect. The holding company was established in Holland, before Britain joined the EEC, to give it a solid foothold in continental markets. And it aimed from the start to be like Scicon in its broadly-based functions.

But Britain has all the expertise on its doorstep. Let's get out there and use it!

Tony Milton



HUGHES... "A company's shape is fixed quite early, like a baby's."

"A company's shape is fixed quite early, like a baby's," said Hughes. "In fact, when our first contract turned out to be payroll, we had to hire someone because none of us knew anything about it."

That problem is unlikely to recur today. With 1,500 staff there should always be someone who knows something about the subject in hand.

Logica's expertise was founded on data communications and spread into a variety of applications. Hughes added: "We also introduced the idea of turnkey systems, but we did it too early. We weren't successful, because people thought only firms like GEC could provide that kind of service."

By 1970 Logica had begun building its own hardware - at Barnet and Swindon. And the rise to prosperity in the Seventies forced Hughes more and more into

the limelight of public engagements and responsibilities. Managing director Len Taylor was left to handle the day-to-day running of the company.

Now Hughes gets more invitations than he can possibly accept. Already he is having to check if he will be free to attend events at the end of next year.

An amateur artist, who has had four one-man shows, he is now wondering whether he can find time to complete 50 paintings for an exhibition in autumn 1984.

He also has to prepare material for lectures at Stirling and London universities, and recently took on the burden of serving on the Alvey Programme steering committee.

Logica has been involved in the Alvey effort from the outset and has designed its communications network. Hughes expects Logica to be a part of all its elements except VLSI.

And still they come

INDUSTRY observers (my good self and cat) are in agreement that if there is one thing the world needs less than another 16-bit micro, it's yet another computer magazine. Yet still they appear (micros and magazines) with alarming regularity.

I am told that one publishing house has plans for further user mags, to follow in the footsteps of IBM User and Acorn User.

Titles are as yet a closely guarded secret, but ICL User has to be a strong possibility, perhaps with a sister publication Perq Owner.

Why owner as opposed to user? Well, ICL may have sold some of them (you know, the ones with the screens the wrong way up) but as there isn't any software, no one can actually use the things.

Chad to be test ground for new weapons

Name taken in vain?

Ready for anything

READERS will have observed the commendable and somewhat typical restraint I have shown over the fighting in certain African States possessed of a rather similar (all right, identical) name to that at the foot of this column.

But I feel I must take issue with the report in the Guardian of August 19 which infers that I "am being prepared for a test of Western defensive readiness".

Now I don't mind being a proving ground for sophisticated wit and wisdom, but I cannot condone the use of this hallowed column as a proving ground for sophisticated technology aimed at hurting people.

Chad

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, September 8, 1983

Time to tackle illicit copying

MRS THATCHER has an impressive line-up for her seminar on science, technology and industry at Lancaster House, London, on September 12. The country's top industrial brains will gather to discuss how they can encourage the creation of wealth.

If this exercise is to be more than pious aspiration, or just another public relations effort, she could do worse than start by giving a date for the Green Paper on copyright. As usual the most urgent need is not for yet more fact-finding inquiries and thus the familiar proliferation of bureaucratic sub-committees. The real need is for positive action on already well-researched subjects.

Computer industry leaders have repeatedly emphasised that the biggest boost that can now be given to software development would be to ensure that authors will reap the rewards of their considerable endeavours. The cash that has been inadvertently lost to Visicorp through illegal copying would have been enough to finance several Alvey programmes.

An official report as long ago as 1977 urged that Britain should be brought up-to-date with a copyright law that recognised the advent of new technology. It is now more than two years since a Green Paper spelled out to the Conservative government what it had to do.

Yet it would appear that those responsible are still seeking advice and opinions and shunting their memos.

Mrs Thatcher is committed to creating a climate in which the pioneer and the entrepreneur will thrive, rather than intervening directly in the marketplace with public funds. Surely a cause such as the modernisation of industrial law ought to be close to her heart. To ignore it is to tempt the cynical response that the pirate is the only entrepreneur to prosper under this government.

Many will argue that the computer people will solve their own problems by and by with the invention of new dongles - hardware protection devices - or ingenious programming which will make it impossible for the parasites to thrive. But it is noticeable that the voices which are loudest in the support of legal laissez-faire belong to those who stand to gain from such inventions. And so far they have offered no more than a partial solution to the problem.

More unbiased critics have been advocating a two-pronged approach, with stronger, clearer legislation operating in parallel with the improved techniques of a self-helping industry.

Apple is to be praised for its strong stand on this issue, however self-interested. It has chased the pirates all round the globe regardless of legal costs, and has been setting some handy precedents. This week's verdict in the US in its favour against Franklin should stir some sleepy legal eagles in this country to review the position here.

We cannot expect our law to follow that of the American, but any news which draws attention to the importance of tackling the dilemma resolutely is to be welcomed.

The micro shake-out

ONLY deft footwork last week by the shareholders of Dragon Data, the manufacturers of the Dragon 32 home computer, steered the company away from the rocks.

The story of the Dragon, and that of the NewBrain micro the week before, is one that looks like becoming all too familiar as the shake-out in the microcomputer industry gets underway. Although both micros were outstandingly successful, in both cases the depths of the troughs between the periods of peak demand were misjudged. Combined with other problems that left a shortage of ready short-term cash.

Prutek and the other Dragon Data shareholders are to be applauded for the prompt and novel way in which they expressed total confidence in their product. The action marks a coming of age for investors in the industry and is one from which the City has much to learn.

More the pity that the Grundy Group allowed Grundy Business Systems, makers of the NewBrain micro, which is being evaluated by European education departments for use in schools, to take a more traditional route into liquidation.

1984 and all that...

THIS week's example of the strange things people say about computers was sent in by Tony Kerr, of Aldershot, who wins £5. "A baby isn't just a collection of simple reflexes," says Dr. Tom Bower, a leading researcher at Edinburgh University. "It is a powerful computer and will act on whatever information it is given."

Solutions are not confined to IBM

PHIL MANCHESTER's article (Computer Weekly, August 18) on relational databases provides a fair assessment of the products available from IBM. Reliance on IBM as a software supplier is an understandable safe option but is not always in the best interest of the customer. To those prepared to look outside this range of products, other solutions become available, which need to be judged on their own merits.

The one underlying agreement of all major software suppliers is that the relational database is the most appropriate tool for an end user decision support system. This system normally obtains its data from a production database, and there are four basic approaches.

1. Employ a network or hierarchical production database and periodically extract information into a relational decision support database (as described in Manchester's article).

2. Retain a network or hierarchical production database, and provide software tools which make it easier for the end user to perform decision support functions, and use specially configured hardware (database machines) to overcome the

machine resource problems common to most relational database management systems.

4. Use a relational database management system designed specifically to support the volumes and transaction rates required by a production system, while still retaining the simplicity of structure for end user decision support operation.

Some of the implications made by Manchester are no longer valid with currently available products. As the article mentions, the physical representation of data within a relational database does not have to correspond to the view the end user sees; indeed, many alternative views of the same data must be available concurrently. Far from being a performance overhead as is suggested, this freedom of physical structure allows a modern relational database to be tuned more effectively and with less impact on application programs or end users than ever before.

The highly structured design of hierarchical and network databases is described as a benefit in terms of production databases. In fact, this approach has been an unfortunate necessity due to the performance problems of early attempts at producing relational database management systems. The need to

build into a hierarchical or network database all the relationships which are used by application programs has served only to complicate the restructuring of databases to encompass new application areas, and is the principal reason for the failure of the true corporate database. Now that relational database management systems are available which outperform these structured systems, the problem need no longer exist.

A lot of emphasis in the article was placed on ad-hoc updating of extracted databases to provide "what if" functions. Products are already available which permit "what if" manipulation on current data without the necessity of applying any updates to the database.

The main message of this letter is that there is a whole world of experience and opinion outside the closed existence of IBM, and that prospective users of database products should look at their requirements and the products available before deciding on a line of action with which they will have to live for a very long time.

ROB HAILSTONE
Database consultant
Applied Data Research
Hitchin
Herts

So many answers

ON seeing Puzzler (Computer Weekly, August 25) I was slightly surprised that there was likely to be a unique solution. This was confirmed when the first solution I found was entirely different from the one supplied.

Indeed, there appear to be whole families of solutions. I have not checked every one of the following, but I suspect that most of them satisfy the problem.

First factor	Second factor
180-189	536-559
480-489	223-229
880-889	114-119
885-889	113-119
980-989	112-119

*884 + 113 does not produce six figures in answer.

With something like 250 possible solutions, I suspect that your mailing will be heavy.

TOM VICKERS

Twickenham
The Editor welcomes letters commenting on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication. Letters may be cut.

Foreign bodies

ALWAYS willing to poke fun at those foreign johnnies, I now bring you a few well-chosen jokes at their inability to speak the Queen's English. The Italians, famous for ice creams, bottom plinching and bankers hanging on bits of rope from London landmarks, think that random access is randomisation and a software designer is a softwareist.

And to avoid any claims of anti-Italian bias, let me add that I'm against nearly all foreign bodies.

Take for example the Germans. Some of their terms are pretty obvious: der high-speed processor is obviously a reference to the coach which takes Helmut and his chums to the Siemens factory.

Kupferstueck is a particularly chewy snack with a metallic taste; and Schreibdrucker a maker of brochures for a furniture company.

10 YEARS AGO

FROM COMPUTER WEEKLY OF SEPTEMBER 6, 1973: Computer 73, to be held at Brighton's Metropole Centre from September 11 to 13, was destined to continue the growth shown in the past two years as a peripheral-only exhibition... The BCS reported that it had wiped out a loss of £67,000 and finished the year with a surplus of £5,400, but members' subscriptions would go up from £11 to £12.



What is going on in this picture? Who is the mystery man with the schoolbag? Suggestions on a postcard please.

Just imagine - it's back to the abacus

DESPITE producing almost 60 million calculators last year, Japan still has a soft spot for its 5,000-year-old precursor, the abacus. It would appear the Nipponese are particularly adept at the mental

discipline required and can even imagine an abacus and perform calculations on it.

This must surely be an integral part of the much-vaunted fifth generation project.

It is but a small step from imagining an abacus which can actually be used, to imagining a supercomputer complete with artificial intelligence which can actually be used.

Liveware File

by Don



SYSTEMS 83

Computer and Communication

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R. L. M. SCHLEE
Marketing director.

Root Computers
London EC1

All for £7,950

RESPONDING to the challenge from my old colleague at Apple, Keith Hall (Letters, September 1), I would like to point out what you can get from Burroughs for £7,950: One B21-45 with 5Mb of hard disc, single floppy and 512Kb of memory, plus the B708 multi-user operating system; one compiler (Basic, Cobol, Fortran or Pascal); the BOS operating system from MPEL; Multiplan spreadsheet; Write 1 word processor (with window); BOS Auto Index; IBM and Burroughs communications as standard.

Of course you will have to use your index finger (rather faster than wiggling a mouse) to select the applications software from the Executive menu on the screen. I think they call it integration.

I could go on but suffice to say you would still have £80 change from your £7,950.

And by the way, we can offer immediate delivery!

OZ HORNEY
ISO marketing manager
Burroughs

Attracting a charge

VDUs have an electrostatic charge at the CRT face, agreed (Letters, Computer Weekly, August 18). Colour television sets have an even greater electrostatic charge at the screen. The viewer is generally at earth or mean floor potential. The CRT face is a point source of charge; it will and does attract dust particles to itself from thermal convection currents which chance to near the CRT.

A viewer can become a point charge source of attraction and the most effective way is to have a synthetic fibre carpet. Walking across this will raise one to as high a charge potential as any VDU screen surface can itself possess and I have measured induced charge potentials of over 20kV in a room where there was no powered electronic equipment present.

By all means let's stop smoking, but let's get the electronic matter in a better perspective and remember we experience higher charge potentials with domestic colour TVs and synthetic fibre carpets in our own homes, not to mention greater flicker, bad viewing angles, greater X-radiation, etc.

I. MACWHIRTER
Stockport

Euromicro conference for Madrid

Talks on latest in chip design

THE annual Euromicro Conference being held in Madrid from September 13 to 16 will provide visitors with a chance to discuss the latest developments in VLSI chip design with people of the calibre of Kenji Kani, system design manager of NEC.

People don't always reveal everything about their latest designs but Euromicro secretary-general Lionel Thomson says he finds the conference a useful forum for discussing the feasibility of new ideas.

Thomson was able to get his plans for a local area networking system called Multilink discussed



RETIRO PARK, MADRID... Secrets may be revealed.

Wilson from the Central London Polytechnic, Peter Fergus of the UK Atomic Energy Authority, and from industry Thomson himself.

The main source of revenue is the conference, which usually attracts about 500 people. Delegates pay £200.

"This provides a surplus to keep the office going," said Thomson.

At the conference papers are presented and panels discuss scientific and technical applications, and practical subjects such as compiler construction, multiprocessor bus systems, distributed processing and education.

From the UK Richard Fothergill will be talking about the

Microelectronics Education Programmes, and Thomson will chair a session on industrial systems. There is also an exhibition, with 76 stands of hardware, development tools, and peripheral equipment.

An added attraction is the Euro-mouse competition - a race through a maze between robot mice.

One-year training for young workers

by Nuala Moran

CONTROL DATA is taking a major part in the government's Youth Training Scheme (YTS), with courses for 700 unemployed school-leavers in computers and electronics starting this month.

One-year training programmes in electronics, data processing and high technology office skills are being offered by Control Data Institutes in Birmingham, Bristol, Leeds, London, Manchester and Nottingham.

Trainees will spend 13 weeks at the Control Data Institutes, and the other 39 weeks getting practical experience in neighbouring industries with a computer or electronics bias.

According to the Manpower Services Commission (MSC), which runs the YTS scheme, many firms have offered work experience to the trainees. But few have the resources to cope with the 13 weeks of classroom training and the administration.

Control Data will act as a managing agent for the MSC. It will be responsible for advertising the courses, selecting participants and finding placements in industry.

Each of CDI's three courses has a core element of three weeks personal development and two weeks computer literacy, based on the BBC microcomputer. The electronics course then goes on to deal with components, basic electronics, assembly, fault-finding and repair.

The data processing course includes data control and preparation, post-processing procedures and basic programming. The office skills course will include keyboard skills, word processing, and office methods and equipment.

The electronics and data processing training will be given respectively towards the City and Guilds examinations Electronics Servicing part 1 and the Basic Certificate in Computer Programming.

"Recently I heard of a case where a draft copy from a word processor of a confidential report on insurance surveys of premises had been discovered on such a rubbish tip. That report contained detailed evaluations of the strengths and weaknesses of premises that would have been a gift to any burglar."



"It gives me pleasure to declare these safe doors officially defunct."

PUZZLER

1 6 7
1 7 1
1 6 7+
9 5 9

HERE is an unusual variation on the alphametic theme. As always, we are searching for a valid sum, but in this case actual figures are already in position.

However, every one of the five digits utilised is in fact wrong. Given just this information, you are asked to reconstruct the sum. See page 71 for solution.

Spies are keeping an eye on your printout

John Mallindine looks at the problem of waste paper in company security

EVERYBODY knows how much printout computers can churn out and how fast they can do it. Paper is generated at such a tremendous rate that it can be a headache getting rid of the bulk that is soon unwanted.

In busy offices, harassed executives, preoccupied with the pressing problems of the moment, often forget the requirements of security when they discard material. With the spread of microcomputers and their associated local area networks throughout each organisation, the security risk is greater than ever.

And the word processing facilities of these micros, and ever more sophisticated office equipment such as the new electronic typewriter, exacerbate this explosive growth in paperwork and add yet another security hazard.

One crime prevention officer recently picked up some discarded printout from a waste paper basket and asked what it was all about. The embarrassed computer room manager had to confess it was a complete European sales forecast, finely analysed by product and sales area.

Leading international security adviser, Vincent Carratu reports that industrial espionage is growing fast. He believes it has been accelerating rapidly since the UK joined the Common Market.

Management can be incredibly naive when it comes to security. Carratu says: "You just have to walk round the back of any large modern office block and look at the rubbish tip. Ten to one you'll find bundles of printout piled on top of the usual black refuse bags. Management would have a fit if it took the trouble to find out what they contained."

"Recently I heard of a case where a draft copy from a word processor of a confidential report on insurance surveys of premises had been discovered on such a rubbish tip. That report contained detailed evaluations of the strengths and weaknesses of premises that would have been a gift to any burglar."

The report also revealed full details of the movements of money between identified locations, including the timings of those movements. Such carelessness invites hold-ups.

If you want to check on security in your office, just stay behind one night - talk to the cleaners and look in the waste baskets. The chances are that you will learn a thing or two.

Carratu's advice is simple and unequivocal. If you want your secrets to remain secret, shred all waste paper and obliterate all superfluous microfilm and fiche.

Those worried about shredding after reading reports of how the Iranians reconstituted shredded documents in the American Embassy in Tehran will be reassured to know that there are many types of shredders now available that will cut papers in various degrees of sophistication, according to the security needs.

Some will cut paper into long, thin strips, others into shorter, thinner strips. Still others will reduce waste into confetti-like proportions.

The price of shredding is not high; costs vary according to the equipment's size, complexity and application.

Some documents are less security sensitive than others. Much waste is of a non- or semi-confidential nature, with little or no value to the spy. The majority of this material can be safely disposed of by the basic office shredder, which reduces it to long thin strips typically between 4-6mm wide.

More secure are models that cross-cut waste into small strips of 3.8x40mm. Some machines cope with waste by the basketful. Rubbish is simply tossed into the hopper.

These particular machines have a voracious appetite: they will even gobble up the odd drink can. Many basic office shredders are fitted with castors so that they can be wheeled around to collect waste from a number of departments. Many have integral baskets, into which waste is compacted. The

plastic liners, often transparent, are simply lifted out when full.

Some large-scale shredders have associated conveyor belts, feed rollers and balers, and can destroy 150 sheets at a time including heavy brochures, cardboard covered files, cardboard boxes and large format paper.

The security implications of destroying unwanted microfiche and microfilm should also be considered. It is often tempting to delegate the job to an outside specialist agency, which will not only collect it, transport it away and destroy it, but will also be able to reclaim its silver content in the process, thus helping to offset the cost of the operation.

If microfilm and fiche is sold in this way for reclamation, it should be reduced to miniature confetti first to make it fully secure in transit. In any case, in this form it is easier to recover the silver.

The detail occupies such a minute space on microfiche and film, it is obvious that it must be shredded exceedingly small. High precision milling mechanisms in machines will turn this material into dust.

Less security sensitive material can be reduced by alternative machines into particles of about 0.6mmx7.5mm.

There is no practical alternative to shredding. Incineration is not 100% secure - documents have been known to escape up chimneys. With shredders there is no heat and no fire risk.

The same argument applies for destruction by pulping or by the hammer mill process (pulpers will not accept certain grades of paper and the hammer mill process still

leaves pieces of waste large enough to be legible).

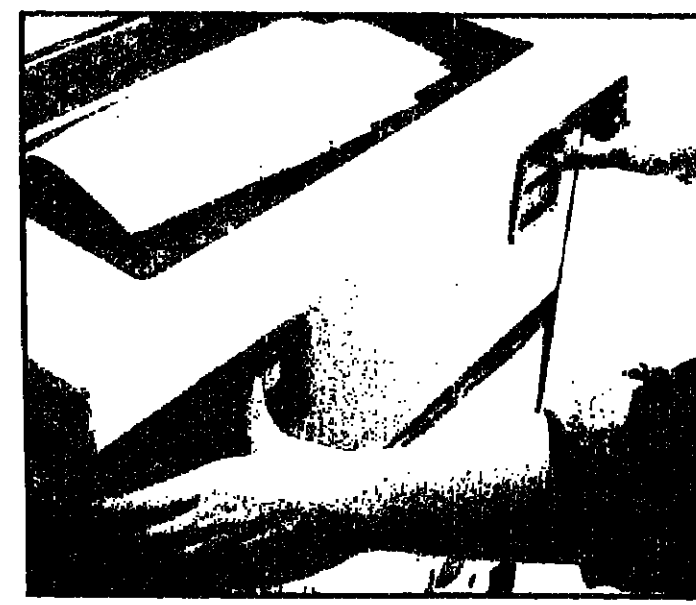
With office shredders you can watch over material being destroyed. You can rest easy in the knowledge of a job done in a secure environment.

You would be free of nightmares of cowboy security destruction agents brought in from outside, and attendant horror stories of highly confidential material somehow "blowing in the wind"

across some rubbish tip.

In addition to recovered silver from microfiche, shredded paper has a market value too. Waste already broken down and bagged ready for recycling is obviously going to be of more value to waste paper agents. So your security efforts pay in more ways than one.

John Mallindine is manager of the Mailroom Equipment Division of Hasler (Great Britain).



The Daterex Forte slices into spiral-shaped strips, impossible to re-piece

leaves pieces of waste large enough to be legible).

With office shredders you can watch over material being destroyed. You can rest easy in the knowledge of a job done in a secure environment.

You would be free of nightmares of cowboy security destruction agents brought in from outside, and attendant horror stories of highly confidential material somehow "blowing in the wind"

Man with a mission to clean up the VDUs

CLEANING video terminals does not sound the most glamorous of business activities, which may explain why it often does not get done. Paul Romaine was so appalled by the fifth in which VDUs wallowed where he was working that he decided to start up his own computer cleaning business.

It could hardly have got off to a better start, as 21-year-old Romaine is one of 20 young people who won the London Head Start in Business competition run by the Abbey National Building Society and the Industrial Society.

Romaine wins publicity and rent-free, rate-free premises for the first year. "I also get counselling in business methods from the Industrial Society," he said.

Romaine has been in business four months, and says he has found it an uphill struggle to persuade big companies to have their VDUs and disc heads cleaned.

But he has managed to win a few contracts from direct mail shots.

For organisations unwilling to pay for a full cleaning service, Romaine supplies a self-cleaning kit

made by a US company.

This kit is the one most widely accepted in the industry, says Romaine, and is sold by Burroughs, Philips and Xerox under their own names. The VDU cleaning part of the kit will fit into a drawer and can be used 40 times, says Romaine.

Romaine's business is called Screen Care, and is based in Caterham, Surrey.

Other winners of the Head Start competition include a snooker cue maker, and a caterer specialising in Caribbean cuisine.



ROMAINE... Keep it clean.

Design and marketing competition for engineers

by Caroline Burgess

COMPUTERS will take a front seat in a government-backed competition for engineers to demonstrate their ability to take a product from drawing board to market.

The competition, called Temework (The Engineering Management Exercise), starts in October and calls on engineers to simulate the design, production and marketing of a product.

A range of software will be issued to the teams taking part to help them to cost the product and make sales forecasts.

Teams of three to six people are being invited to enter the competition, which will be held in three rounds. The first round, from October to December, will end with requests for venture capital from each team.

One-fifth of the teams will qualify for the second stage. They will have until March to take the product from its design stage to its launch.

Four teams will then go on to the final.

Temework is being sponsored by the Engineering Council, Ashridge Management College and The Engineer. The exercise and the software have been developed by Jeremy Hall, who constructed similar schemes while working for Honeywell and later ran management exercises from his own consultancy.

The software will be supplied on cassettes and will run on Sinclair's Spectrum and ZX81, Dragon 32, Commodore Vic 20, Tandy Colour Computers Lynx and the BBC Acorn.

A listing in Basic will also be available.

Entry fee for the competition is £70 and there is a first prize of £2,000.

Prolog - it's good fun but can you explain it?

THE language Prolog is being talked about a great deal, partly because the Japanese are giving it such red carpet treatment in their fifth generation project. But does anyone really know what it is?

The experts presumably do, but they seem incapable of explaining it to lay people. They can tell us what it is good for - natural language processing and artificial intelligence applications - but even sample programs leave people wondering what it's all about.

When I first played with the language on a micro, I enjoyed it immensely. It was so much more fun to use than Fortran and Cobol. And I have it on high authority that the reason for its favour in Japan is that Kazuhiko Fuchi, the technical director of the fifth generation project there, took a fancy to it after one of his underlings brought it back from Stanford University in the US. The main competitor was Lisp.

Stanford had got hold of the language from Edinburgh University, where much of the early work was done under Bob Kowalski.

But, as often with pioneering work, other people had a similar idea. At Marseilles University, a similar language was being developed for automatic language translation. The two separate strands of development have since been tied together in Prolog.

The result is a language that, unlike most other computer languages, is based on an obscure branch of mathematics rather than the need to crunch numbers in commercial data processing departments.

As the language is now so much in vogue, an Oxford University team has produced a paper about it. Stuart Shurrock, of the university, says that anyone with some knowledge of computers will understand it.

It is, in fact, based on three papers written in Marseilles, which, said Shurrock, were written by people with Prolog flowing in their blood.

A computer warning from the weatherman

MUCH has been said in the serious daily newspapers about the dangers computers could bring. Now a warning comes from Sir John Mason in his presidential address to the British Association.

There is some wisdom in Mason's words, but he drew too heavily on his own experience of computers (writes Philip Hunter).

Mason is just retiring from a long spell as director-general of the Meteorological Office.

His warning to the annual meeting of the British Association was that computer models should not automatically be applied to complex fields such as economics or social behaviour, where - unlike meteorology - there are no basic laws.

There was a danger, Mason warned, that governments would become dominated by huge computer models of the economy based on the whims of biased individuals.

Workplace is compiled by Philip Hunter

But later in his address Mason fell into the trap of generalising his experience of computers in weather forecasting to other applications.

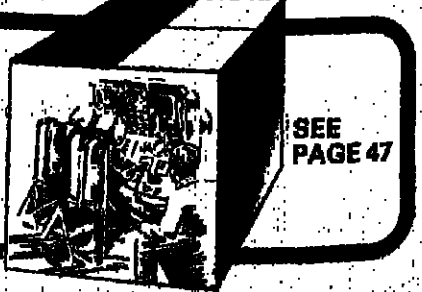
Computer models may provide guidance in the medium term, between the misleading short-term fluctuations and the long-term unpredictable outcome, he said.

This statement is true of weather-forecasting, where computer models can neither cope with hour-to-hour local fluctuations nor forecasts of longer than 10 days, when the inaccuracies of the model pile up.

But it is not true in governmental forecasting. People in the computer industry are well aware of the fallibility of advice generated by mathematical models. What needs to be stressed is that what comes out of a computer bears a direct relationship to the assumptions made by the designer of the program.

FERRANTI
Selling technology
Cheadle Heath Division

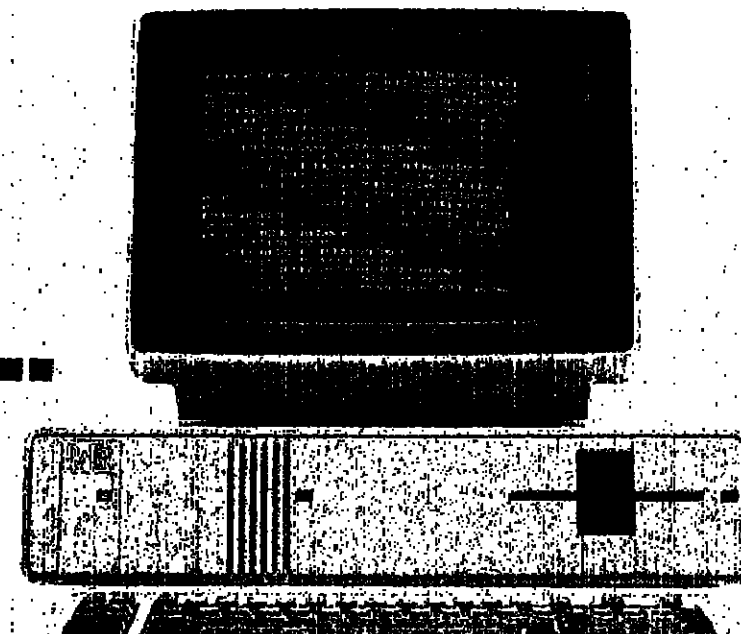
SIMULATION



For those who thought choosing a user friendly, high capacity, software compatible, multi-user, business computer was a black and white decision:

The RAIR Business Computer...

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For details of your nearest Authorised RAIR Business Computer Dealer contact Phil Harris, Rair Ltd, 8-9 Upper St. Martin's Lane, London WC2H 8EQ or telephone 01-838 8821.

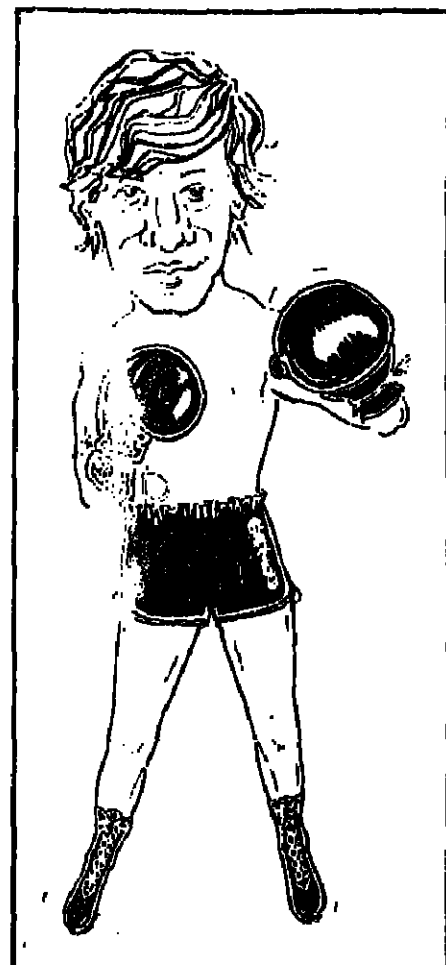
The Rair Business Computer incorporates both 18-bit 8085 and 8-bit 8085 microprocessors, up to 1024K bytes of RAM, 20M bytes of disk storage, and supports up to four workstations running CP/M, MP/M, or MS-DOS compatible software.

System prices start at £8500 plus VAT.

Iranians reconstituted shredded documents from the US Embassy in Tehran - better shredders are now available.

SOFTWARE MONTH

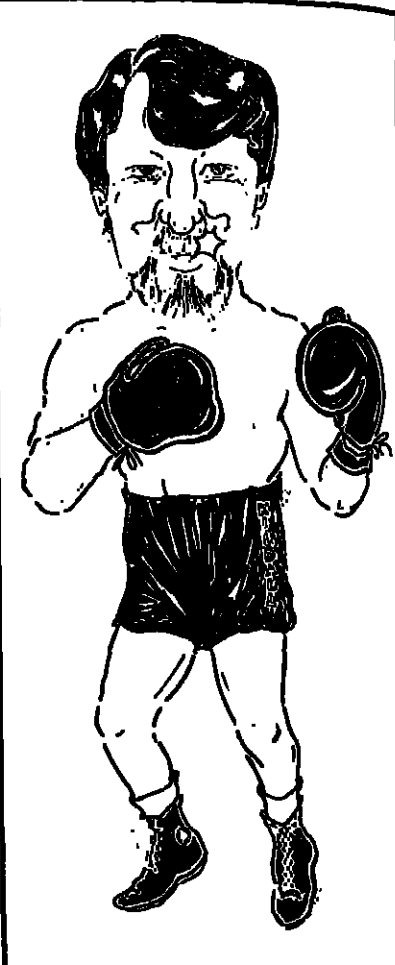
COMPUTER WEEKLY September 8 1984 23



The battle for 16-bit micro software hots up

Sixteen-bit microcomputers have been around for several years, but commercially viable systems have been available for only 12 to 18 months. Hardware is worthless without its software, and the software companies have been waiting to see which 16-bit operating system

establishes itself as the industry's standard before committing themselves. As a result a growing number of 16-bit applications have simply been translated from established eight-bit systems, and there is a dearth of packages written specifically for 16-bit hardware



THI market has been spoiled by the 8-bit phenomenon known as CPM. Never before in computing history has there been, and possibly never again will there be, such a single, dominant, universally accepted standard.

The emergent 8-bit market was completely different from the emergent 16-bit market. CPM became established before any rivals appeared. The snowball effect then took over and its sheer market dominance eliminated and/or prevented any opposition.

For the 16-bit market, software houses... competing head-on to establish their own operating system, and there are already several minicomputer 16-bit operating systems, such as Unix and the proprietary DEC PDP-11 systems.

Because of the fundamental difference between minicomputer and microcomputer usage, it is unlikely that a minicomputer operat-

ing system will be adopted as the standard for microcomputers. Minicomputers are usually controlled by computer operators and/or trained data processing managers. The applications user rarely comes into contact with the operating system, which has, therefore, evolved into a system for the professional DP man - not the non-technical end-user.

Microcomputers, on the other hand, mostly have a single user, who is both systems operator and applications user. But he is rarely a technically qualified computer professional; so he needs an operating system far more friendly than a typical minicomputer system. This explains Microsoft's attempts to turn the unfriendly Unix into the user friendly Xenix.

Although there is no single standard operating system, there are two clear front runners for the mass commercial market: CP/M-

86 (or probably the new Concurrent CP/M-86) from Digital Research, and MS-DOS from Microsoft. These two companies are market leaders, and keen rivals. They are competing not only in operating systems, but in almost every sphere of computing.

First one and then the other seems to gain the ascendancy, only to be overtaken by the other. At the beginning of the year it was being claimed that MS-DOS was already the established standard. Then, Concurrent CP/M-86 was released, and less was heard of single-tasking MS-DOS. Next, Microsoft announced its MSX home computing standard specification, produced in collaboration with the Japanese government and clearly of fundamental importance to the development of the automated home.

Digital Research countered this with the claim that Microsoft had jumped the gun, and that disaffections were occurring. Now DRI has announced its own specifications called VIP, which is probably of greater relevance than MSX. It has also announced its new Personal Basic for home computers, aimed at breaking the dominance of Microsoft Basic on computers such as the Oric and Dragon 32.

Sinclair (Spectrum), Mattel (Aquarius), and Computers (Lynx) are currently talking to DRI about CP/M implementations, and many other UK home computer manufacturers are interested. If a com-

puter has disc drive capabilities, then its manufacturer is probably thinking CP/M.

Microsoft, on the other hand, says claims that the Japanese are not satisfied with MSX, are untrue. There are rumours that several named disaffections never happened, and that one firm was persuaded back into the fold by the Japanese government. Microsoft claims that the next version of MS-DOS will be multi-tasking.

There is little appreciable difference between concurrency and multi-tasking for the commercially oriented single-user microcomputer market. Neither phrase is even mentioned in the *Dictionary of New Information Technology* (Century, 1982), while the *Concise Encyclopedia of Information Technology* (Gower, 1982) equates multi-tasking with multiprogramming, which is the technique of running multiple programs in a single computer so that "while one program is awaiting some event (usually an I/O interrupt), another can be executing".

Concurrent programming, however, is defined as the technique "whereby a number of programs are executing in a computer" so that "they are effectively running in parallel". It is unlikely that the word processing supervisor or the office accountant will be much concerned with the finer points between them.

Rob Bell, software development

manager at Future Technology Systems, commented: "The abundance of conflicting reports and opinions makes it difficult to anticipate what DOS III will offer. Concurrent CP/M offers both multi-tasking and concurrency. Concurrency gives the user the ability to perform a number of jobs simultaneously and switch between them. The user can see, feel and use the facilities offered by concurrent CP/M. Multi-tasking is a more traditional internal feature put there by the software implementer. The esoteric concept of multi-tasking is altogether more difficult for a user to grasp."

This, then, is the current state of the rivalry between the two dominant systems software companies seeking to establish the standard 16-bit operating system. Both companies are still conducting themselves well. Much of the publicity about the rivalry emanates not from the companies but from individual dealers striving to help their own selected operating system.

Few people will forget the amazing campaign from ACT at the beginning of the year, when the Sirius importer, or people closely associated with it, did virtually everything but deny the existence of a company called Digital Research.

This was astonishing, considering the current view of ACT. Richard Gray, technical director of ACT Pulsar, commented: "CP/M

was the first operating system in the mass market. With the arrival of 16-bit hardware, MS-DOS would have buried CP/M-86. However, the advent of Concurrent CP/M-86 shows that Digital Research has leap-frogged Microsoft, and we are all waiting to see how MS-DOS 3 answers the challenge."

"We are now pushing Concurrent CP/M-86 on the new Apricot, and would like to do so on the Sirius, but must wait for that action from Victor in the US."

"Much of the implementation work of putting Concurrent CP/M-86 on the Apricot was done on the Sirius. Now Microsoft and Digital Research are the two main suppliers of 16-bit operating systems. Competition is good for the market. Like IBM, we would like to support both camps."

Of the two, it is probably fair to say that Digital Research is more commercially minded than Microsoft.

David Fraser, general manager of Microsoft (UK), said: "Gates of Microsoft and Gary Kildall of Digital Research are both electronics visionaries, very much on a parallel. They can both see into the future of electronic applications, beyond the view of most mortals. The difference, if there is any, is that Gary is a commercial engineer, always with one eye on the market, while Bill is a pure engineer, with his eye more on I and D than on market trends."

SOFTWARE MONTH

How Microsoft became a top 16-bit contender

A profile of the company that is fighting Digital Research for supremacy

DAVID FRASER tells the story of how Bill Gates and Paul Allen set up Microsoft: "Versions of the same Basic were sold to Apple and Commodore, and on the strength of the increasing interest in their Basic, Gates and Allen formed Microsoft in Albuquerque, where they felt the microcomputer action to be centred. But they didn't like it and soon moved back to their home town of Seattle, where Microsoft's headquarters has remained ever since."

"Here they stayed and here they grew, specialising in languages, and particularly the Microsoft Basic that became the CP/M standard programming language. Microsoft became an extremely successful CP/M software house and, although not many people realise this, has actually installed more CP/M than Digital Research itself."

"During the course of implementing both CP/M and Basic on different machines, Microsoft developed a reputation for knowledge of hardware as well as software. Microsoft has actually had a hand in hardware design for a number of leading manufacturers. It was perhaps for this reason that IBM approached Bill Gates with its original plans for a new micro."

"Bill was amazed. He told IBM that the entire design concept was appalling - an 8-bit cassette based system. The system, he told them, must be 16-bits and disc based."

"IBM accepted the criticism, but then asked where they could get a 16-bit disc-based operating system. Existing rumours suggested that Digital Research was about to release CP/M-86, so Bill suggested that IBM visit DRI. This it did but DRI was unhappy with the restrictions and stipulations that IBM demanded. No deal ever emerged, so IBM went back to Microsoft and suggested that, if Bill knew so much about operating systems, perhaps he would like to produce one himself."

"Bill knew of a local Seattle company already working on a 16-bit version of CP/M. This, incidentally, explains the apparent similarities, at the user level at least, between MS-DOS and



FRASER... Home town HQ.

We have always learnt from our mistakes. Now we probably know the needs of the market better than any other company

CP/M. Anyway, the ultimate result of this collaboration was DOS 1, implemented on the IBM PC as PC-DOS, and elsewhere as MS-DOS.

"They are, however, the same operating system, and the differences between the two are no more than the differences you might expect between any two MSDOS implementations."

"Sirius MS-DOS is perhaps the only outsider, everywhere else MS-DOS is implemented at the bottom of memory, but Peddle wanted to do something else with graphics and decided to put it at the top."

This, then, is the company fighting Digital Research for 16-bit supremacy. At the moment, Digital Research is ahead with

Concurrent CP/M-86. Rumours suggest that there may be some surprising announcements from leading manufacturers deciding to adopt Concurrent CP/M-86 during the next few weeks and possibly before this issue of *Computer Weekly* is read.

It is only fair, then, that the last word should go to Howard Kornstein, DRI's European director of technical support: "DRI is no longer the only supplier of microcomputer operating systems in the market. It will, however, remain the most experienced company. Over the years we have developed experience in operating systems second to none."

"We have made mistakes - that's part of the learning process (8-bit MP/M was a mistake -

technically we succeeded, but an eight-bit processor simply cannot support the demands of multiple users). But we have always learnt from our mistakes. Now we probably know the needs of the market better than any other company."

"By developing our own graphics system, for example, we are moving towards ever more advanced operating systems - a graphics driven visual CP/M requiring no user manuals is feasible. And by linking such a Concurrent operating system into the next version of CP/NET (which will support communications not only to other micros, but also to mainframes), we shall have 16-bit operating systems capable of supporting the complete automated office."



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The college buddies who are now challenging Digital's CP/M

GARY KILDALL and Bill Gates are the names behind the battle for 16-bit supremacy.

The story of Kildall, a young consultant working for Intel and developing CP/M in his spare time, is well known. The story of Microsoft is less well known, but goes a long way to explaining the rivalry. Microsoft started as a CP/M software house; it is a parasite that has outgrown its host, for it is now larger in size and turnover.

The story of Microsoft is really

the story of two men: Bill Gates and Paul Allen. Allen is the elder, but they grew up together in Seattle, and attended college as friends, with a common interest in computers and computing. While at college, they were able to access a large DEC machine and began to find bugs in the operating system. DEC was surprised - in fact, so surprised that the minicomputer giant offered a year's free use of the machine if the pair could find 10 more bugs. They found 40. Naturally, during that time they

made full use of the computer, and became experts in DEC's Basic.

For a while after college the two went their separate ways. But at about that time a small company called Altair in the Southern states put together probably the first microcomputer, little more than a chip in a box. Allen contacted Gates and persuaded him that they could implement DEC's Basic on the new micro.

Together they contacted Altair, which was interested in, if

sceptical about, the project. By Gates said Allen did it in 10 days.

They put their new version of Basic on to paper tape and took it to Altair, arriving the day before the demonstration. There was a most a disaster when they found that the Altair operated on a different paper tape code from the one they had brought.

It is said that they stayed up all night converting their tape to the required format, and that they implemented it on the Altair next day, where it ran first time.



KILDALL... One eye on the market (see page 22).



The system with the pedigree

'Unix is much loved, and rightly so, by programmers'

WHILE MS-DOS and Concurrent CP/M-86 fight it out for supremacy among 16-bit operating systems, Unix and its derivatives are becoming ever more popular. Digital Research believes that Unix is probably the biggest threat to Concurrent CP/M-86. MS-DOS 2 is so far single-tasking and therefore no threat, while the P-System technically competes in terms of portability, but cannot ultimately compete when its portability is based on a Pascal interpreter. (CP/M's portability is based on a C compiler.)

"Unix, however," claimed DRI's Howard Kornstein, "is a development system. It is much loved, and rightly so, by programmers, who enjoy the cryptic ability to string multiple commands on one line. But it is not an operating system for the end-user."

It is because it is not a system for the end-user that a number of other software companies are heavily engaged in producing user friendly versions.

Max Itoup of Keen Computers, a firm with a long history of interest and expertise in Unix, said: "It is perhaps the only large operating system that was developed specifically to provide the user with a good programming environment."

"It was originally developed for, and is still largely used on, minicomputers.

"The Unix story began in 1969, when it was developed on a DEC PDP-7, at Bell Laboratories, for the parent corporation, AT&T. It was developed primarily for internal use, by and for Bell Labs, and was never intended as a commercial venture. Indeed, US anti-trust laws forbade Bell Labs from selling any commercial software for Unix.

"Because of these anti-trust laws, the use of Unix outside AT&T was restricted for many years to the non-commercial academic environment. Bell Labs was prepared to grant licences to universities and institutes of higher education, but the cost of a commercial licence was prohibitively high.

Thus Unix developed as a sophisticated and well documented

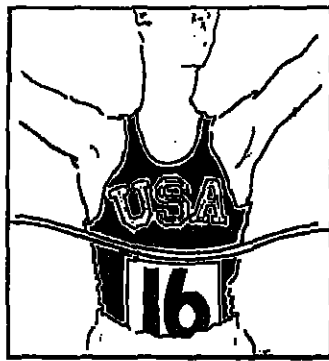
operating system within academic circles. Now a flood of Unix expertise is becoming available to the commercial world as the graduates who used Unix extensively during their studies leave university.

"The appearance of Unix in the commercial computing world came with the final granting of commercial licensing agreements to hardware manufacturers in 1980. By this time, Unix was already a highly portable operating system, running on a variety of hardware systems. Today, there is a bewildering number of so-called 'Unix-compatible' systems, and it is important to examine them closely, as some come closer to the genuine article than others. Idris, for example, which runs on DEC's LSI-11 range, was developed to resemble a Unix version 6 system, before the advent of the commercial licence, and as such, is a reconstruction of Unix rather than a true implementation.

"There are other companies that have obtained a commercial source licence from Bell Labs, and have enhanced Unix, making it more user friendly, such as Interactive Systems Corporation, which markets a product called ISI, which will run on Vax or Onyx systems

These views are largely echoed by Precision Software, a software house that decided to base its products on Unix.

John Tranmer, Precision managing director, commented: "Unix is now the only serious contender



for the role of industry-standard, machine-independent multiprocessing system. No other operating system is available across the broad range of multiprocessing systems being released into the

The major strength of Unix to purchasers of multi-user systems is that it provides a truly portable environment. It handles any number of users equally well; can support user directory structures to any level of differentiation; and is itself highly portable, being implemented for the most part in the high level C language

(ISC does not manufacture its own hardware).

"Other companies, such as Plexus Computers, obtained a Version 7 source licence, and implemented it on their own hardware, just as it came - a 'plain vanilla' Unix. At present there are versions to run 28000 systems (Plexus, ISC, and Microsoft implement these), and there is a version for the 6809 chip (UniFlex), and of course, for the DEC range."

market.

"Unix has a similar pedigree to DG AOS or DEC Vax, but has had some 12 years in which to mature before first becoming available commercially in 1980. It has had the advantage of a huge development investment in the relatively cloistered atmosphere of Bell Labs, the research arm of the world's largest corporation.

"Because of the anti-trust laws, Bell Labs was effectively

prevented from becoming a minicomputer manufacturer itself. This meant that Unix became a particularly attractive operating system for other manufacturers.

"The major strength of Unix to purchasers of multi-user systems is that it provides a truly portable environment. It handles any number of users equally well; can support user directory structures to any level of differentiation; and is itself highly portable, being implemented for the most part in the high level C language.

"Applications developers have access to a set of powerful development tools, so making the standard of applications software that much higher. And with the current widespread availability of Unix on well over 100 machines from the IBM PC to the Amdahl mainframe, it means that the user can select his software first before making any firm decision on a particular choice of software. Moreover, he can subsequently switch from one machine to another with no costly software redevelopment.

"So why should a purchaser choose a multi-user operating system? The answer is 'Why not?' The limitation of many environments, CP/M, MS-DOS, to single-user is a software limitation. CP/M was designed for a chip family that was not expected to support multiple users. It is, as its name implies, more a control program than a true OS. Now we have the new families of low-cost chips quite capable of supporting multiple users in the same way as traditional mini processors, so why be limited to a single user any more?"

One answer, begging to be suggested, is: "Why, when chips are now so cheap, make all your users share one, when they could for very little extra have one each?" There is, however, little doubt that Unix scores wherever a computer installation has a computer operator with specialist computing knowledge.

It is not for the microcomputer end-user who has no knowledge nor interest in the finer complexities of computing theory and practice.



KORNSTEIN... "Programmers enjoy the cryptic ability to string multiple commands on one line."



TRANMER... "Unix is the only serious contender."

SOFTWARE MONTH

Users of micros are unlikely to get the service that other users enjoy, writes David Ferris

Poor outlook for vendor support

MY preceding two articles have dealt with the future support role that DP is likely to fulfil for personal computers, and the level of back-up support DP can expect to receive from its suppliers. Unfortunately, some of the vendor services that are readily available for mainframe and minicomputer products will not be available for micros because of lower prices and margins. This article deals with some major areas in which DP will have to become self-sufficient.

Most personal computers used within corporations take advantage of standard software packages, such as the spreadsheet VisiCalc, or the word processor WordStar. Highly turnkey systems are little used and even such common applications as accounts receivable, accounts payable, and general ledger (UK: sales ledger, purchase ledger, and nominal ledger) receive scant attention.

Hence, many of the problems relate to software packages. Supplier support is likely to be noticeably lacking in package evaluation, post-installation technical support, and user training.

Although micro packages are cheap, corporations like to standardise on a small number, each used a great deal, so an evaluation is worthwhile.

For the vendor offering packages costing \$100,000 or more, the lure of cash is a good reason to provide the customer with a high level of technical assistance during his evaluation. But for the next two or three years at least, DP manufacturers will have difficulty in persuading package vendors to co-operate in the sales process as established vendors such as MSA and Cincom do.

These evaluations are not just one-time efforts of drawing up some comparative matrices and filling in the blanks. Users will continually be approaching DP support groups to ask how certain kinds of system should be implemented. Determining the correct solution is not straightforward. For example, at Del Monte - a leading manufacturer of canned foods - the manager of a can manufacturing plant wanted to implement a raw product inven-

tory system. On investigation, it turned out that before very long the applications would be expected to grow into a full-blown MRP (material requirements and planning) system. There is simply no way that an ordinary micro package vendor can afford to participate in this sort of analysis.

Post-sale package support presents further challenges. The first problem is simply getting someone to talk to. Try telephoning many vendors for help and you'll have to hold on for half an hour to get through to a technician, and if you leave a message asking for your call to be returned, responses are rare.

Over the long term, it may get easier, as vendors treat support as a separate profit activity - not just an expensive burden. Sooner or later, service contracts will probably become available. But there will still be major shortcomings in vendor support.

Different vendors offering competing products will not be keen to show how competitive products can replace their own. Consider, for example, the case of a VisiFile user. The user has perhaps built a database of customers using this package, and now decides that he wants to use this with his word processing package, WordStar.

The user wants to use his database as a mailing list, to send out a series of tailored letters with WordStar. VisiCorp is unlikely to be of much help, because it will wish to encourage VisiFile users to use VisiWord as the word processor of choice. On the other hand, MicroPro (supplier of WordStar), would prefer WordStar users to use Mail/Merge, its own database package. Thus competitive forces often hinder the vendor's ability to provide candid assistance.

Each personal computer user will use a number of different packages, each of which will function with other programs in a co-ordinated way. This integrated portfolio of applications will run partly on the user's own personal computer, and partly on other attached processors - personal computers, mainframes, or minicomputers.

For example, it will be common for a user to have database,

spreadsheet, graphics, and project management packages on his machine. These will have to work with each other, and the database package will also have to be interfaced with the corporate database running on a mainframe.

Similarly, spreadsheets will frequently be interfaced with a mainframe financial model. An electronic mail package will be connected with co-operating electronic mail systems on other user systems (which will consist of micros, minis, and mainframes).

As new versions of the software component are released, the management of change will become a nightmare, because a multiplicity of interdependencies will have developed. Thus, a new release of a database package for a small



David Ferris is chairman of Ferris Corporation, a vendor-independent firm which provides personal computer support and training within MIS environments. As a software industry expert, his personal clients include Amdahl, Cincom, Hitachi, Intel, VisiCorp, and Xerox. Based in San Francisco and London, he has an MS in computer science from Stanford University, California.

change in a mainframe financial model will cause hiccups among thousands of users in unexpected ways.

The many varied environments in which the packages work will make the task of problem determination and fixing very difficult.

and frequently it will be beyond a vendor's support capabilities. The provision of support is essentially a professional services business. At root, microsoftware package vendors see themselves as manufacturers of mass-marketed products, rather than as suppliers of highly skilled people. Most vendors will find the prospect of growing a massive support operation singularly unattractive, and difficult.

Communications will be one of the greatest areas of demand for post-installation support. Personal computers will be heavily networked. They typically start as standalone systems, running a spreadsheet or word processor, but they rapidly start to communicate with various other systems.

A wide variety of different underlying data communications technologies will be used to provide the required networking, including local area networks, PBXs, public switched voice and data networks, leased lines, and home-grown networks. The communications protocols used will also vary tremendously.

The next 10 years are unlikely to see really effective communications standards evolved. As a result, there are many ways in which the underlying communications network will run into difficulties, and problem determination and fixing will often be very difficult.

It will often be unclear whether

a package is at fault, or whether the communications network should be blamed. For example, a small and unnoticed change in mainframe configuration can cause file control characters to be transmitted in slightly different ways. Thus, files which have been downloaded satisfactorily to a micro database package can suddenly start causing problems. It can be difficult to confirm that there is nothing wrong with the database package, and to determine the real cause of the difficulty.

New software releases are a fact of life, and they bring ripples of indeterminate magnitude in their wake. I doubt that package vendors will be of great help in determining how to correct communications problems.

In two or three years DP will probably have taken up the reins of end-user training. Corporate staff will produce training materials tailored to the organisation's own needs, using its own special examples and language.

Traditional information centre training has been limited to a few people (for example, a mainframe financial modelling package typically has between 10 and 30 users), but many micro packages, such as a word processor, will be used in large numbers. Education of end-users will clearly represent a major area of growth for DP

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PROJECT MANAGEMENT

Learn the way of the pharaohs for project success

Keith Baldwin looks at what the ancient Egyptians can teach us

THE trouble with project management is that the underlying concepts are so relatively simple, indeed obvious, but the sound application of them seems to be so extraordinarily difficult. It would be a rare project manager, even a successful one, who could put his hand on his heart and say he had not violated some of the basic principles on occasions.

Of course, it isn't only applying the concepts that causes problems. When things go wrong, people (and perhaps especially DP people) tend to fall back on a variety of "sophisticated techniques", computerised control systems or just sheer paperwork overhead.

The thing we need to remember is that projects did not come in with computer systems. Projects have been around for a long time and so there is plenty of history from which to identify the basic principles of successful project management.

No doubt the pharaohs did not consider their pyramid-building efforts to be projects, but that was what they were. They must have been well planned, they certainly had a well defined end product and a well organised team of workers. One or two pyramids might have had problems with change control, but they must have been pretty successful projects.

So what is it that they could do that we so often forget? At its simplest level, it is that projects are about people, not computer programs. Project management is simply a management approach to getting things done. Anything which gets in the way of getting things done has no place in effective project management.

Project management is not project control, it is not sophisticated techniques and it is not management by committee. There may sometimes be elements of the above, but project management is about managing people to achieve a planned result.

The ancient Egyptians may have used more stick than carrot in managing their workforce, but the thing which they clearly succeeded in doing, and where we most often fail when projects go wrong, was in assembling, motivating, co-ordinating and managing an effective workforce.

We can explore these issues a little further by examining the basic characteristics of a project. A project must have a single set of objectives which must be absolutely clear, agreed and quite specific. The project will also have a finite life: they do not last forever. When the end product is produced, the project is finished.

This seems very basic, but it is undeniable that many projects are launched without anybody being too clear about where they are going or, perhaps even worse, launched in two or three different directions at once.

Of course, precise definition of objectives isn't always easy and sometimes the exact nature of the required end product can't be defined. In this case, the answer is: Don't start the project, start a smaller one first that will research the ground ahead and define the final end product.

The project team will be a group of people who are organised and directed so that they can achieve the objective. Perhaps the most important decisions in project

management concern the organisation and staffing of the project team.

This area, as well as being perhaps the most difficult to get right in the first place, tends to have the most impact on the success or failure of the project and can be the most difficult to put right during the project if it isn't working out.

The need for good people on an important project is obvious enough, as good people generally produce good results. However, finding the best 20 brains around is not good enough. You need to have the right balance of skills you will need. Then on top of it all, the people selected must be capable of working as a team.

Organising the team won't be easy either. Should you use a dedicated team for each project or sub-set of a project, or should you rely on a functional (matrix) organisation? More likely it will be somewhere in between with all the disadvantages (as well as advantages) of both.

But the most difficult part of forming a team will be finding a project manager. A study of the technical, personal and management attributes needed by a good project manager could no doubt fill several articles such as this. Suffice it to say that a really good project manager is a very rare – and expensive – bird.

Even if you have such a person, that alone is not enough. The project manager's position in the orga-

nisation must be such that he is not only capable, but responsible, accountable and has the authority to take appropriate decisions. The right person in the right place can transform your chances of success.

As for this project plan, quite simply, if you can't plan it, you can't produce it. Despite this, there are still too many examples of projects where people wanted to get on with the real work and planning took second place. The results were not usually impressive.

Planning need not require highly sophisticated techniques, though the right techniques certainly have their place, so long as it is done thoroughly. Even a cigarette packet might be appropriate sometimes.

The basic tools required are a pencil, paper for planning charts and a good application of brainpower. The basic ground rules are to think every task through carefully to identify all of its component parts.

Don't use guesswork and make sure that every task has an end product. If it doesn't have an end product, why are you doing it, and how will you know when you've done it?

Avoid "end-date scheduling" if at all possible. This technique works by a high enough level of management simply saying "it will be done by the end of August". This technique does work, as it

can concentrate the mind wonderfully and, of course, sometimes it is necessary. However, it usually generates a fair amount of strain along the way, and it is unlikely to produce good results in the long term when teams are moving on from one project to the next.

A project doesn't become a project just by announcing it. Senior management must demonstrate commitment to it by allocating appropriate resources and delegating appropriate authority. They have to show they mean business.

At least as important is the fact that the project will not succeed without the personal commitment of the project manager. He must believe in what he is doing, otherwise his troops will not be willing to climb out of their trenches and follow him into battle.

Lastly, and perhaps overlooked more than anything else, is the fact that the end product must be for a customer. The project must therefore be directed towards satisfying his needs, not the team's needs, and towards keeping him informed and involved at all stages.

The fact that the project must have a customer can be overlooked in two ways. Firstly, at the beginning of the project sometimes there is no customer in that no one is willing to state that he wants the end product and is willing to pay for it. The result, with computer projects, is the development of a superb system which nobody wants and which will probably never be properly implemented.

Secondly, even if there is a customer at the beginning, this gets overlooked along the way and a communication barrier develops. At the end of the project there is the familiar cry from the customer "but this isn't what I asked for".

A satisfied customer is one whose expectations are met. This can be achieved by agreeing at the beginning what he is going to get, defining the end product, then keeping him fully informed along the way. Even better, if he is involved, he might be able to do some of the work.

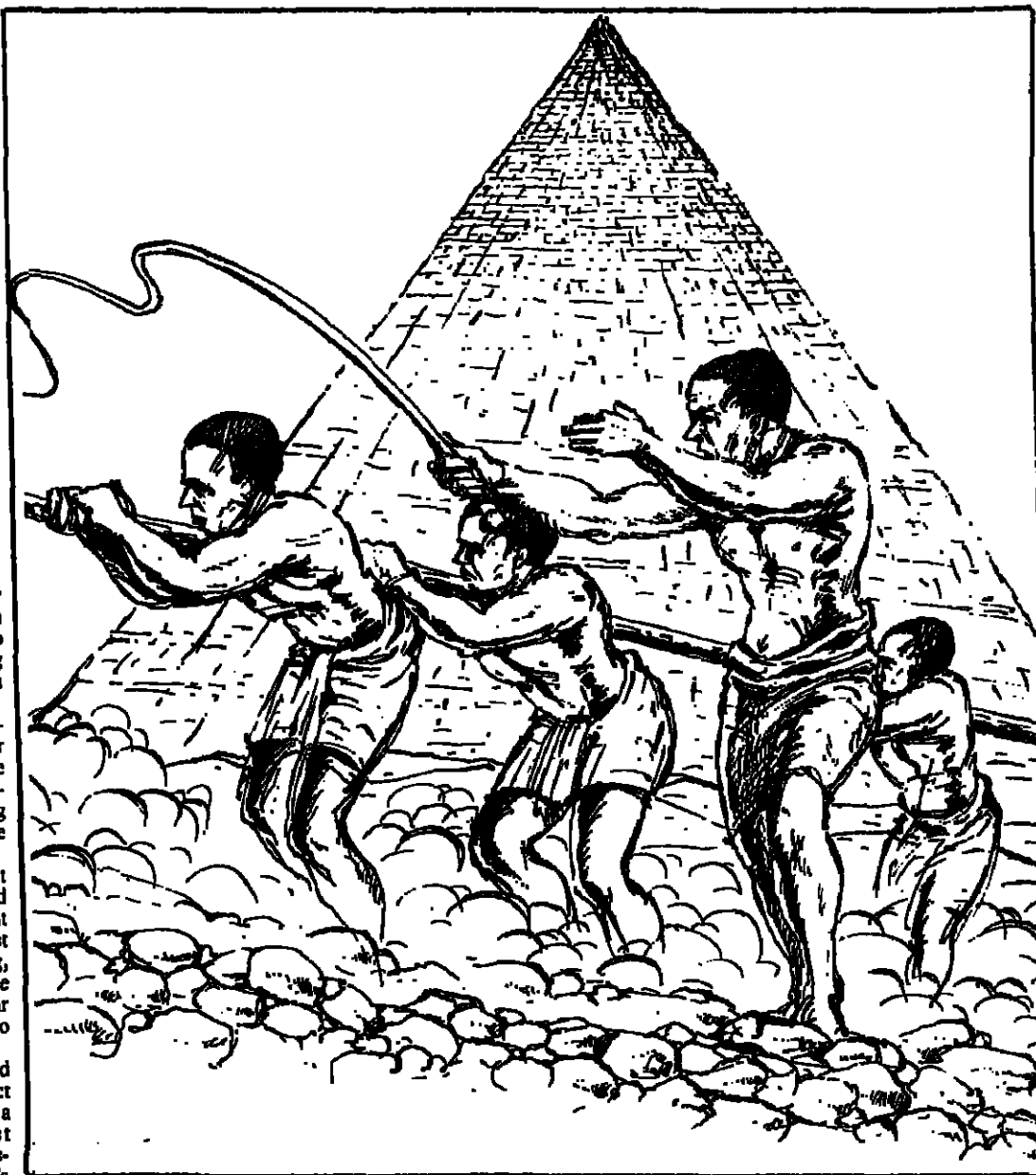
Establishing effective communication with the customer is one of the project manager's most critical roles. He will be the focal point of all project related communications. That does not mean, of course, that no one else can talk to the customer, but only the project manager can co-ordinate the communication.

Even a passing consideration of the project characteristics described above will show that, if projects are to be managed effectively, you need sound management before sophistication and people before programs.

It has often been said that the worst way to sort out a rotten manual system is to computerise it. All you get is a computerised mess instead of a manual mess.

Project management is just the same. If it is not working, adding sophistication will just make the real problems more difficult to sort out, and will probably destroy one of the most critical elements of a project – good communication. If there are problems with project management, the only solution is to go back to basics and apply first principles, no matter how painful.

Keith Baldwin is a partner in the DP Group of Deloitte Haskins & Sells Management Consultants.



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PARK METAL

PEOPLE

■ Premier Computers of Windsor has joined Premier Computers BV, and appointed **Ton J. Lijfers** as sales manager. Lijfers has spent the greater part of his business career with IBM in development work, product planning and for seven years was a sales manager with responsibility for the banking and insurance sector.

■ Chris Durran has been appointed national sales manager for Wordplex UK, heading a team of over 100. He joins from Data-point, where he was in major account sales, progressing from salesman to area manager in a few years, and from there to regional manager.

■ Floating Point Systems, has appointed **Roy T. Houston**, as managing director of the Dublin-based operation. He was previously employed by Centronics Ireland and Andus Electronic (UK) of Lurgan.

■ Gresham Lion Electronics has appointed **Tim Denslow** as sales and marketing manager for its Video Products Division. He recently joined the company from peripherals manufacturer Penny & Giles Data Recorders.



■ **Wilkins Computer Systems**, the IBM system supplier and computer consultancy, has appointed **W. Kirk MacNulty** as senior management consultant. MacNulty has technical, management and consultancy experience in a variety of industry sectors, including insurance, finance, manufacturing, fashion clothing, shipping and construction. He is presently concerned with the application of information technology to specific business situations.

■ **Decision Data Computer (GB)** has made **Paul Raggett** South-west area sales manager. He will be responsible for marketing the company's IBM plug compatible System/34, System/36 and System/38 peripherals. For the past 6½ years Raggett has been employed by BASF, recently as regional manager, hardware sales.

■ **Ashton-Tate** has appointed **David Imberg** as managing director, Europe, to develop its marketing and production activities throughout Europe. Imberg joined Ashton-Tate at the beginning of this year as UK managing director, where he has developed a sizeable sales and support team for the five micro software products currently being marketed.

■ **Rediffusion Computers** has appointed **Ken Mace** as Teleputer dealer salesman to cover the Southern part of Britain. Mace previously spent four years as a dealer manager for ITT CP (UK).



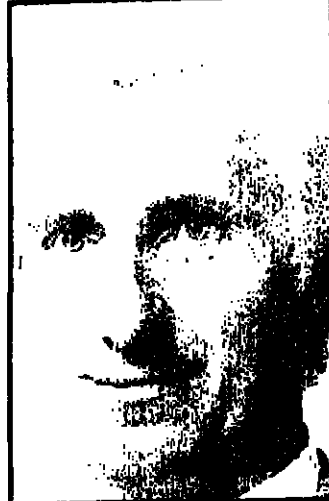
■ **Package Programs** has appointed **Gordon Mayes** internal services manager. This is a new position created by the company's continued expansion. He will be working on technical projects related to internal communications. Mayes has spent the last 14 years with the Grand Metropolitan Group, recently as commercial manager of the computer bureau.

■ **Coda**, the Leeds-based supplier of financial software, has named **David Newman** as a consultant. He joins Coda from Digital Equipment, where he was a software consultant for large computer systems. His new role is to support the implementation and further development of Coda's interactive accounting systems for mini and super minicomputers.

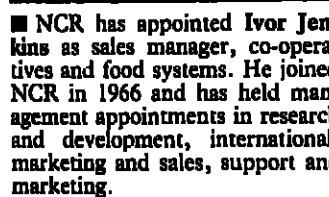


■ **Softsel** has established a Product Services Department and appointed **Susan Lawson** (above) as manager. Lawson has considerable experience in software distribution — she previously ran her own company, SBD Software. Also joining the product services department is **Stephen Trotter**, formerly with Micro-C.

■ **LA Computer Services**, which provides a range of professional and bureau services, has appointed **John Acres** contract services executive. The contract service provides skilled and experienced computer staff to work on client projects under the client's control. He previously worked as a sales executive responsible for Computer Output Microfiche (COM). **Gerald O'Brien** has joined the company as sales consultant dealing with the LA Property Management system. He was previously with Lancing Bagnall as computer manager and ran his own systems firm, Keydata, for several years.



■ **Peachtree Software International** has introduced a new licensee account service and **Dick Campin** (above) has been made manager of licensee accounts. Before joining Peachtree, he was manager of ICL's Retail Industry Centre. Three account managers have been appointed: **Lynda Lyen** (above), who joined Peachtree in September 1982 as a support consultant with responsibility for agents in Europe and the Far East; **Michael Bennett**, who joined Peachtree in January 1982 as support analyst; and **Frank Hoeksma**, who has joined as licensee account manager from UGSL Microsystems, where he was project manager. **Belinda Cattermole** has also joined Peachtree as senior support consultant. She has spent the past two years as a freelance management consultant.



■ **NCR** has appointed **Ivor Jenkins** as sales manager, co-operatives and food systems. He joined NCR in 1966 and has held management appointments in research and development, international, marketing and sales, support and marketing.

■ **Gerry Hill** (below) is the new sales manager at Real Time Development. A former sales and marketing manager at Padmede Computer Services, he joins with special responsibility for UK and European sales of Clearway, RTD's low cost local area networking system.



■ **Bob Brown** has been appointed distributor sales manager by Versatec Electronics, a Xerox subsidiary, and supplier of electrostatic printer plotters. He will be responsible for the sale of Versatec equipment in Europe, particularly in Norway, Sweden, Finland and Denmark, as well as Switzerland and Italy. Brown joined Versatec three years ago as a sales executive in the South-east.

■ **Memory Computer** has appointed **Fionnuala Freney** and **Barbara Williams** as sales support executives. They will be responsible for providing on-site training for distributors and end-users, ensuring the systems are up and running, answering customer enquiries and giving sales demonstrations. Freney joins from Memory's Dublin parent company. Williams joins the company from Quartz Computers, a microcomputer dealer in London.

■ As part of a plan to see turnover double within a year, **GST Distributions**, the sales organisation of GST Computer Systems, has recruited **John Gooch** as commercial systems consultant and **James Moriarty** as sales manager. Gooch was the computer bureau general manager at Precision Computer Services, a large printing group. Moriarty worked for DRG Business Machines on a multitasking system with the ability to carry 160 Mbytes of information.

DIARY

SEPTEMBER 12-14

Advanced Fortran 77 is a course for staff with a basic understanding of Fortran. It is run by Control Data, takes place at the Control Data Institute, London, and costs £275. Details: Jackie Barclay, 01-637 2171.

SEPTEMBER 12-15

Advanced IBM Cobol is an Altergo course for programmers with at least 12 months' Cobol experience. To be held in London, it costs £450. Details: Altergo Education, 01-836 9303.

SEPTEMBER 12-15

PL/I Consolidation is an Altergo course for inexperienced PL/I programmers. It takes place in London and costs £450. Information: Altergo Education, 01-836 9303.

SEPTEMBER 14

ISS Northern Branch is holding a seminar in Manchester on micrographics. Cost is £15 for members, £18 non-members. Further information from A. J. Oulton, (061) 228 6171.

SEPTEMBER 13-15

How to Design and Build DP Internal Controls is a workshop for DP professionals, at the Control Data Institute in London. The fee is £345. Information: Sylvia Lyons, 01-240 3400.

SEPTEMBER 17-21

Structured Fortran is a workshop for personnel new to programming. It will be held at the Control Data Institute, London, and costs £375. Further details from Jackie Barclay, 01-637 2171.

SEPTEMBER 19-20

Network Protocols is being run by Monadnock International Management Development at the Royal Garden Hotel, London. Details: Annabel Hartog, 01-262 2782.

SEPTEMBER 19-21

Network Design is a seminar run by Frost & Sullivan. It takes place at the Mount Royal Hotel, London, and costs £425. Details: Carolyn Budd, 01-486 0334/5.

The Advance Cobol workshop

for programmers with some experience in Cobol takes place at the Control Data Institute, London. Cost is £275. Details: Jackie Barclay, 01-637 2171.

SEPTEMBER 20

Seminar on Structured Analysis is designed for managers to evaluate the use of these methods for their own companies. It takes place at the Cophthorne Hotel, Crawley, Sussex, and costs £20. Details: Brenda Wigley, (0293) 31211.

SEPTEMBER 20-21

The Status Users Group annual conference takes place at St Peter's College, Oxford. Fees are £45 for members, £55 for non-members. Details: Jim Hetherington, (0532) 737475.

SEPTEMBER 20-22

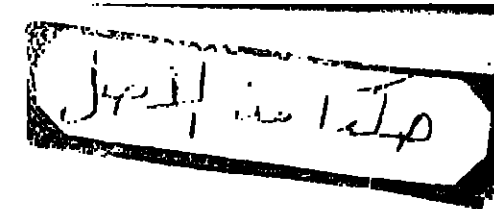
The Prime User Group conference takes place in conjunction with the Prime Education User Group at Surrey University, Guildford. Cost per delegate is £70 residential, £50 non-residential. Details: Ray Balmer, (0925) 35953, ext 2619P.

CONFERENCE

■ IN ORDER to help its supplier members raise the necessary funds for expansion and innovation, the National Computing Centre, in association with a consortium of City investing institutions, has arranged a one-day conference and associated "Investment Market" for Saturday (September 24) at the Hotel Russell, London. Speakers include David Fairbairn of the National Computing Centre; Bill Freylenfeld of W. A. Freylenfeld & Associates; Tony Richmond of Barclays Bank; Richard Hargreaves of Newmarket Investment Fund; David Murrell of Pear Marwick Mitchell & Co; Ken Phillips of Kicat & Aitken; and Simon Morris of Guidehouse. The "Investment Market" will contain stands representing about two dozen investment institutions, many of which have arranged hospitality

suites in the hotel for private discussions. The delegates' fee of £65 (plus VAT) includes lunch, a programme containing full details and services available through members of the consortium and a copy of the NCC guide, *Financing for Information Technology*. Further details are available from Philip Virgo, Technology Assessment Services Manager, National Computing Centre, London EC4A.

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12-14 Oct 1983

C - Advanced Workshop 19-20 Sept 1983
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COMPUTERS AND THE POLICE

11 years ago few police forces had any direct experience of using computers, apart from using the town hall data processing department to do the wages.

Today, most of the 52 police authorities in the UK have been initiated into computer use. Most aspects of policing are either being considered for computerisation, or have already been computerised, although the extent of computer use varies across the country.

Computers are now used to help trace fingerprints at New Scotland Yard; to investigate traffic accidents on the M1 motorway; to track the killer of children such as five-year-old Caroline Hogg and 11-year-old Susan Maxwell; or simply to put through a routine 999 call to the appropriate local police station.

There are major benefits to be gained, for police work is highly labour-intensive. Since the Bow Street runners first expended all that energy keeping the streets of London relatively safe, the clerical and administrative side of policing has mushroomed. The modern hobby spends hours writing reports and searching through records.

But there are disadvantages for the public if computers are used indiscriminately. The Data Protection Bill soon to be given its final reading in the Commons, has brought the issue of police use of computers into sharp focus (see facing page).

There are 43 police authorities in England and Wales, including the Metropolitan Police in London, and nine forces in Scotland and Northern Ireland. The Home Office, which is directly responsible for the Metropolitan Police, puts up half the capital costs of the other forces and has a major say in what computers are used for. But its role is advisory — it cannot direct a force to buy computer A, or to install system B.

The police first began to use computers directly in the early Seventies. Along with the government, the National Health Service and other public sector bodies, the police began trials with common systems, which were then expected to be widely used.

The first two independent police computers were installed in Birmingham and Glasgow between 1973 and 1974, and these forces (now enlarged to form the West Midlands and Strathclyde authorities) have maintained a lead in the development of new systems.

The market for police computer systems is big, according to Arthur Isaac, who specialises in it at Honeywell's marketing unit. While it is impossible to put a price tag on it, one can get some idea by considering the major elements now being bought.

The cost of a system depends, largely, on the size of the force. The Metropolitan Police is a 26,000-strong force, policing a population of several millions.

There are several other large authorities, such as Greater Manchester, West Midlands and Strathclyde, with forces of over 5,000. Most county forces are between 3,000 and 4,000 men and women, and there are a few smaller ones, with between 1,000 and 3,000.

All these forces are potential customers for four major systems.

Isaac outlines what these are, and what they do. "The police market breaks down into a number of operational systems. First and foremost is administration — doing things like sophisticated personnel, fleet management (of police cars and the like), general office automation and some finan-



A potentially lucrative market is provided by Britain's 52 police forces. But while there is no standard, it's a risky business, writes Paul Walton.

The police: a big new market for systems — but not an easy one

cial, like the fixed penalty parking ticket for instance.

"Next comes command and control, which we are very strong in (Honeywell installed one of the first for South Wales police authority). This has the job of recording incidents as they come in, as 999 calls or whatever, and of deciding who should attend to them. It deals with management reporting of efficiency and responses, the overall control of resources, message switching and interactive links made to the PNC.

"There is also crime information. This system deals with the handling and storing of details on convicted criminals; details of outstanding crimes to be solved; and lost and found property. It is possible to enquire about information held on the file without knowing about it in detail.

"Lastly, there is the criminal intelligence system, where the information held is not wholly factual, and where what you might call speculative details are held on people who may not have a criminal record, but are suspected of having committed a crime."

Isaac said that Honeywell sells

all these major systems on its DPS-6 minicomputers (as well as on some mainframes and microcomputers), along with more specialised pieces of software, such as the Major Incident Room Index and Action Management (MIRAM).

Miriam has been hurried into action by recent public concern, following the lengthy Yorkshire Ripper case, where the police found it difficult to deal with large amounts of information held by several co-operating forces.

Honeywell's sales literature describes Miriam as a tool to aid the old manual card-index approach to major crime investigation, where different operational policies can be set to suit the incident.

The powerful heart of the Miriam software is its use of the Status free text retrieval package. Status will allow records to be searched, with incomplete names or descriptions. This allows significant connections to be made in an enquiry, and suspects to be thrown up more efficiently.

Essex police has taken Miriam, and with the Home Office will evaluate it for national use. The

high cost of the system may mean that it will eventually be a national service, like PNC, or that smaller microcomputer derivatives will be offered to some forces.

In response to the interim need for an incident system, the Home Office has recently recommended a microcomputer software package which it commissioned after the Yorkshire Ripper was caught. The package highlighted the positive benefits which police computing could have for the general public.

Police forces are at different stages in the purchase and development of standard computer systems like these, but by the end of this decade all will have them in one form or another. Patrick Mayhew, junior Home Office minister with special responsibility for the police revealed the current state of play in answer to a written Parliamentary question from Labour MP Michael Meacher, last February.

Mayhew said that nearly half of the 43 police authorities in England and Wales were either using or planning to buy command and control systems. He also revealed

that a third of these authorities were using, or planning to use, computerised criminal information systems.

Meacher also asked: "What is his (Mayhew's) role in approving the function of the computer in each of these cases, and what independent discretion do chief constables have in deciding which of these types of system is required?"

It is important to note that Meacher's question specified both criminal information systems (straightforward recording) of data, and the more controversial criminal (or local, qualitative) intelligence systems.

The Home Office ducked Meacher's distinction between criminal information and intelligence, saying that it did not distinguish between the two. In answer to his question about accountability to Parliament for the precise function of a police computer, Mayhew replied that no specific approval was required — it was up to the local police authority.

But Mayhew added: "The [Home Office] provides guidance

as appropriate, and is involved in research and development work."

The Home Office has, to a large extent, let the police get on with computerisation. There have been three joint computerisation projects to date, with a fourth about to begin. The police have used a group of 10-12 systems houses and major suppliers to work out what they would do, with the Home Office looking over their shoulder by virtue of the grant it makes towards capital expenditure.

Isaac said that, while the front-runners are now planning more sophisticated, replacement some police authorities are just beginning to use their older specifications to save time and money in catching up.

The Home Office and the police forces are not well equipped to develop systems. New computer applications are often re-writes of specifications already in use. There is a lack of research.

Most policemen and women use computers, but few help to design systems. The Police Research Services Unit draws two chief superintendents from each authority, and they get a chance to work with computers on two-year secondments.

The Assistant Chief Police Officers (ACPO) organisation is responsible for promoting standards, and monitoring developments. It works with the Home Office in gathering information, which is later circulated to all the forces. A report on the Thames Valley Intelligence Project is going through the mill now. It will be circulated as advice, and with some general guidance on how to proceed. It will be for local police authorities, and the local councilors, to decide how to proceed.

The Home Office does have one special Scientific Research and Development Branch (SRDB), which looks at new solutions. It is currently active in the promotion of standard specifications for the four popular systems, as well as looking into the application of more microcomputers (to save money), and private viewdata (to share information).

The main suppliers are Honeywell, Burroughs and ICL, and a host of minicomputer-makers. Distributed computing is popular with police authorities, which have to cover large areas and operate online for most applications.

Most police computer systems are specified by them, but implemented by a systems house on a turnkey basis. Here the suppliers include Software Sciences, Systems Programming (SPL), Logica, Leasco, IAL, and CAP.

While there is big money to be made, there are difficulties with police systems. Systems houses often agree to build ambitious projects, using another force's best specification, without realising the degree of tailoring needed or the time this will take. SPL is believed to have complained to the Home Office after losing between £500,000 and £2 million implementing a system for Northumbria police.

To get a foothold in this prestigious and lucrative market, systems houses have rushed the design stage, and have been lumbered with fixed price contracts.

More evidence of the difficulty in building police computer systems comes from Software Sciences' recent £3 million order from the Kent and Humberside forces, which are working together with the Home Office to try to bring together many state-of-the-

art features.

The Home Office said at the time: "We are looking at the possibility of a national standard. This specification might well be accepted by other forces, but that is what we have got to see," the spokeswoman added.

Software Sciences has just won a second order, from Merseyside police in Liverpool, to build an advanced command and control system. But there will be no criminal intelligence system in the Merseyside order, despite its inclusion for Kent and Humberside.

Merseyside police dropped the crime reporting option, which was to gather qualitative information, before the event, to get its new system through Liverpool's Labour controlled police committee.

Software Sciences is designing both sets of police computers (dual Burroughs mainframes in both cases) along the same guidelines, but dropping the criminal intelligence option for Merseyside police.

Standards may be set by the Home Office, but they can be overruled by the local police authority.

There are often strong political influences on local police authorities. When the Home Office decided to exempt the police from inspection under data protection legislation, the Association of Metropolitan Authorities (AMA), which is labour controlled, said that it would take on the job, informally.

Last April, the West Midlands police chief, Sir Philip Knights, announced that he would not be allowing his data — gathered and held on a new £3.5 million system — to flow on to the Police National Computer (PNC). Thirteen police forces have direct links to the PNC; Sir Philip was the first chief constable to abstain.

The West Midlands police force, pushed to some extent by the local Labour administration (where Councillor Edwin Shore is chairman of the AMA's Police and Fire Committee, which made the independent audit pledge), became the first to go for a voluntary

COMPUTERS AND THE POLICE



Big new market for systems

■ From page 34

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police code on what information to use and store.

Sir Philip, speaking at the time about the force's wish to abide by proposed data protection laws, said: "It [the criminal information system] will not contain information that is not factual, or relevant to the aims and objectives of the system." He added that no links to the PNC would be made either.

These two contracts are worth about £3 million to Software Sciences. Both use state-of-the-art hardware and software.

The police are likely to spend near £100 million on advanced systems by the end of the decade, according to Isaac. This will come in waves of replacement and the introduction of what standard specifications now exist. He gave this estimate for a county police force, about to build all four common systems from scratch.

Command and control, the heart of operations, would need a dual processor, online communication with tens of hundreds of peripherals such as printers and VDUs. It would cost about £1 million complete.

Criminal information is more difficult, as there are not many packages around, and the software needs a lot of tailoring. It could cost at least £2 million, and would have a very large amount of disc (or, in the future, more intelligent and accessible) store.

Criminal intelligence systems have so far been limited in the UK to the Thames Valley experiment. The cost of such systems is likely to start at £1 million and increase according to how sophisticated a picture of the local community is being prepared.

The administration system, having to hold detailed records of staff and resources availability in real time, is more expensive. It would cost from £80,000 on a Honeywell system, using the same hardware.

Hard-pressed local authorities have got to think about spending in the region of £4 to 5 million for police computing. More will be prepared to do so, Isaac said, as the crime figures continue to rise, and as computerised systems already installed begin to show their worth.

Big Brother fears as data banks expand

Police computers store information on victims as well as criminals. Links with other data banks create fears of intrusion into privacy.

THE Hendon-based Police National Computer (PNC) began to offer its records service to the local forces in 1974. Soon 24 forces will have a direct interface to the PNC. It is also linked to the Driver Vehicle Licensing Centre, which has a daily dump of data held on magnetic tape, soon to be replaced by direct connection.

But the Home Office has consistently denied that any other government systems are linked to the PNC.

Police use of computers has been dogged, rightly or wrongly, by a Big Brother image. Many people fear that more connections between the various Government systems, including those used by the police and the armed forces will lead to an Orwellian situation.

Criticism has been directed at a joint Home Office and Honeywell experiment to install a criminal intelligence system for the Thames Valley police. This system will be 10 years old next week. It goes well beyond the traditional clerical and administrative use of computers.

In criminal or local intelligence gathering the police store and refer to information about the population before an offence has been committed. It could be dubbed preventive policing.

The PNC is the police's own master index, and the most comprehensive register of crimes in the UK. Since 1974 it has developed services for dispensing information

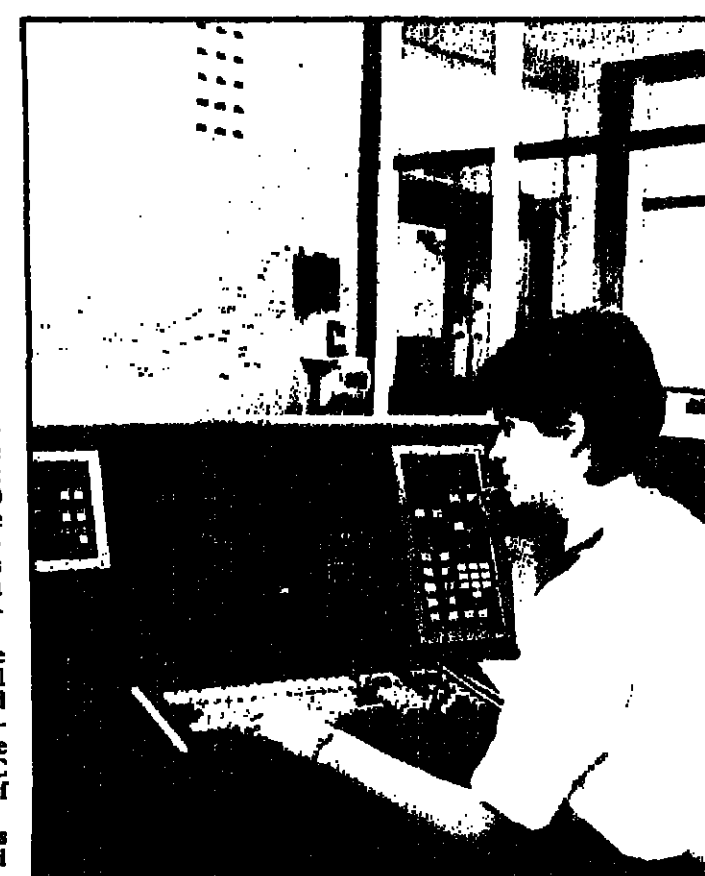
on stolen and suspect vehicles, vehicle owners, fingerprints (in collaboration with the special unit at Scotland Yard), criminal names, wanted and missing persons, and disqualified drivers, and cross references all this information.

While PNC literature claims that "the system has been designed to ensure the integrity of all data held on these indices, and every precaution is taken to guarantee the security of this information against unauthorised access," its critics say that it is being used to monitor more than just stolen cars or missing persons.

In the Technical Authors Group (TAG) pamphlet *Police use of Computers* it is explained that police forces linked into PNC carry out far more vehicle searches (often 40 or 60 times more) than the numbers of stolen vehicles reported missing. TAG concludes that the PNC is used to help what the police call "low level intelligence gathering".

In 1979, one-third of all police forces were interested in criminal intelligence, much of it gathered from PNC. TAG criticises the development of local intelligence gathering facilities using the PNC data, without the accountability of a data protection Act.

The PNC is the police's own master index, and the most comprehensive register of crimes in the UK. Since 1974 it has developed services for dispensing information



Control room in South Wales links 100 VDUs and printers.

there is such an act to allow people the right to challenge information about them.

The Home Office has revealed that there were over 40 million entries on the PNC index on April 3 this year — more entries than there are adults in Britain.

The Home Office's major intelligence gathering experiment at the Thames Valley police headquarters in Oxford — the Intelligence Project — has recently been extended. The collation of information on non-criminals takes place on a huge database. Victims, as well as their attackers, find their way on to the files.

Critics have attacked the security and accountability of the Intelligence Project, arguing that it increases the amount of speculative investigation which the police undertake. There is also fear of political or racial bias finding its way on to the records. Information certainly seems to flow one way — on to but seldom off the Thames Valley system.

While the public may benefit if known criminals can be kept track of by either of these applications of sophisticated computer systems, there are dangers that negative aspects of policing may become more apparent. In other words, innocent people may unwittingly find themselves on file.

The Data Protection Bill is a watershed for police computing, as the moral issues will now be thoroughly debated. The Police defend their computers in much the same way that they defend their general reputation.

The costs and benefits of police computing are explained in a Honeywell brochure outlining what it offers to this growing market. "The modern police force can be looked on as a large-scale business enterprise, offering services on the one hand and incurring costs on the other," it asserts. "The service is law and order, while the costs are rates and taxes. Honeywell, one of the biggest suppliers of computers to the police, does not discuss the moral issues."

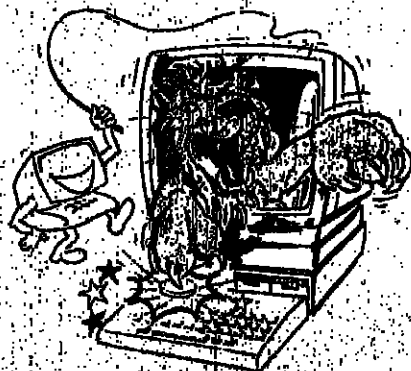
The debate on the Data Protection Bill provides an opportunity for an appraisal of police accountability. The Lindop committee, set up to consider data privacy, concluded with relation to police use of computers: "We believe, therefore that the best way to avert any fears and suspicions of such systems would be for them to be subject to the data protection legislation we propose."

But after much prevarication, the Minister responsible for police and the security forces at the Home Office, which will appoint the Data Protection Registrar, ignored the Lindop recommendation. The police are to be exempt from the Act and free to gather whatever information is useful for their operational use.

While the Home Office is believed to be preparing some plan for police accountability to the Registrar, this will probably be merely a code of practice, issued to give guidelines to the local police authorities.

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Bell rings true to history of the century

Power of Speech, A History of Standard Telephones and Cables 1883-1983. Peter Young. George Allen & Unwin. £9.95.

IT SHOULD have been possible for a reasonably far-sighted person, on January 1 1900, to guess which organisations would be dominant, even after an unpredictably volcanic century, 100 years onwards. Bell would have been a safe bet. It would be possible, certainly, to tell the history of the century in terms of Bell and not miss a lot out. This, on a small scale, is what Peter Young has attempted here.

STC began as an arm of Bell's manufacturing partner, Western Electric. The difficulties of persuading the Post Office are legendary. He doesn't actually quote the well-known phrase "No use for your invention, Mr Bell", but that attitude is implied.

Culture clashes adorn the story of the phone, embodied in the statue of the telephone cherub in Temple Place. The Brazilian Emperor cries: "My God, it talks!" Then J. B. Kingsbury, ambitious youth, derives some benefit from state sermons by using them to acquire shorthand.

By the 1920s, however, we are already into the familiar world of big business, large contracts and accusations of nationalistic bias. The firm became STC when Bell sold it to ITT in 1925 and Kingsbury resigned. The great slump that began with the crash of 1929 hit it far harder than the second slump of the late '70s. The company made a loss in 1932.

Employees then felt as grateful to the boss, Tommy Spencer, who saved them from having to march from Jarrow, as their modern counterparts might do at being saved from Toxteth or Brixton. High job security left little enthusiasm for trade unions.

The Woolwich workers were dispersed in the Second World War to Somerset and Leicestershire and the company grew fast. Those who were left in London were visited by Churchill amid the bombing.

The dead hand of the Post Office continued to affect STC through the 1950s and slowed its progress in telephone exchanges. The late '50s was the time when relying on the Post Office induced complacency, gaining technological superiority but not exploiting markets. Profits were "ungentlemanly".

ITT headhunted Genecor from Raytheon to put things right. He did it. He introduced STC to five-year plans and to computers. But STC was still in no great shape when it narrowly escaped nationalisation by Tony Benn in 1970 - Labour's election defeat rescued it.

Kenneth Corfield, who was brought in that year to put the firm back on the right road, had the same motto as MSA's John Inlay: "Stop doing what loses money and start doing what makes it." He acted ruthlessly, dragging STC kicking and screaming into the electronic era to compete with GEC and Plessey.

While parent ITT was getting a bad press for its role in Chile in collusion with Nixon, offspring STC was trying, under Corfield, to learn to be a better employer.

Last year, which saw ITT's share drop to 35%, also saw STC drop out of System X, a decision which has yet to be proved sensible or otherwise.

Those who will enjoy this book are staff and ex-staff people whose imaginations have been fired by convergent technologies or the recasting of Britain, and Cecil Parkinson.

George Black

Networks call for better illustration

A Managers' Guide to Local Networks. F. Dierker and W. Stallings. Prentice Hall, Hemel Hempstead. £12.70.

The aim of this book is to enable managers considering computerisation to "hold their own with the experts and would-be experts". This text does more effectively than the presentation, with liberal use of similes and analogies, although the balance between simplicity and technical complexity is

not always consistently held.

The most lucid and readable chapter is the one on technical fundamentals and standards which, ironically, is that set aside for "optional reading".

The six-page, tabulated comparison of the benefits and drawbacks of different ways of recording and retrieving information will also be particularly valuable to the book's target readership.

John Riley



"It's from head office asking how the R&D project is going."

Ideal reading for the novice programmer

Data Processing and Management Information Systems. R. G. Anderson. Macdonald and Evans, Plymouth. £4.50.

DATA Processing and Management Information Systems is a sensible, practical guide to all aspects of business computing, using down-to-earth examples such as payroll and stock control systems.

It makes ideal reading for new programmers or for managers installing their first computer. It describes computer systems not in terms of binary and the inner workings of the processor but instead in terms of data flow from the accounts office to data preparation, file updates and output to disc and reports.

All aspects of introducing a

computer and developing an application are covered in a no-nonsense way, including lists of organisational considerations, likely data fields and the analysis, flow-charting and programming of the problem.

Different types of processing and peripherals are described and there are chapters on bureaux and software services.

The book has the feel and layout of a handbook, with sort chapters split into brief sub-sections. This makes it easy to find passages on any aspect of data processing. There are also many line drawings and diagrams.

The weakness lies in the fact that this is the fourth edition of a book first published in 1974; there are far too many anachro-

nisms. There is heavy emphasis on punched cards and paper tape. The ancient ICL 1900 Executive is held up more than once as an example of an operating system. Mainframe consoles are called electric typewriters. And the section on bureaux refers to COSBA, an organisation which died many years ago.

Other failings include emphasis on only two manufacturers: ICL and NCR. Sections on private viewdata and digital telephone exchanges, for example, suggest ICL is the only supplier.

Despite these failings, this book has much sensible instruction to offer in its 480 pages.

John Kavanagh

Beware the legal traps when buying a system

Understanding Computer Contracts. M. Edwards. Waterlow Publishers, London. £6.50.

PURCHASING computer systems is full of legal traps for the unwary, particularly when it comes to computer contracts, as neither the law nor the lawyer has yet come to terms with the grey areas opened up by information technology.

The purpose of this book, written by a commercial lawyer, is to guide the buyer through the legal jungle and at least draw attention to the main pitfalls awaiting the unwary. In its 121 pages, the book focuses on the legal implications of hardware purchase, software licensing, maintenance, agreements and bureau services, but also covers a comprehensive range of other areas connected with buying a computer system.

Edwards succeeds in these aims to provide a clear, digestible guide for the busy manager and also gives a useful checklist of the key points he has to consider at all stages - from negotiation to decision, from contract to litigation.

The book certainly succeeds in putting the legal frighteners on potential buyers, encouraging them to seek legal advice - solicitors' guides to house purchase come to mind - but it does not discuss average proportional costs, or at what stage it becomes cost effective to consult a lawyer. It also gives no advice on how to choose him.

These criticisms are particularly relevant, as the book highlights two worrying situations: the "overall inadequacy of the legal reaction to the new technology which causes concern" is one. The inexperience of lawyers with computers and related law is the other. The book draws attention to the many legally hazy areas, especially in software.

Software is the most fuzzy area for the lawyer - and likely to be the most expensive. Intellectual property law, which is taught in law schools, is in a state of flux anyway, and intangible software creates even more problems. Software and, even more, firmware present unsolved problems with both patent law and copyright law.

Edwards offers the chill warning that "the lack of case law and legislation in the UK means there is a widespread lack of specific computer expertise among lawyers".

A major point the book makes is that buyers should not be mesmerised into buying a computer system without studying the small print, and that they should be prepared to negotiate terms.

Even without contacting a solicitor, the reader gets a good flavour of the most blatant catch-all exclusion clauses that are likely to appear in contracts, and has fair warning of the complexity of co-ordinating contracts when several services and companies are involved in the purchase of one computer system.

If the book only draws the attention of the computer industry to the inherent weakness and lack of support it gets from the legal system, it will have provided a major service. But it is also likely to go much further than that and become required reading for all buyers of computer equipment.

John Riley

Brevity pays off in Fortran choice

Problem Solving with Fortran. Larry Nyhoff and Sanford Leestma. Macmillan Publishing [US].

Fortran 77, A Top-Down Approach. Nonna Kliss Lehmkuhl. Macmillan Publishing [US].

A Course in Programming in Fortran. Revised to incorporate Fortran 77. Valerie J. Calderbank. Chapman and Hall. £5.95.

CRITICS of the Fortran language complain that it is inelegant and an awful mess of conflicting features. For its fans, the language has become a bold effort to be all things to all programmers.

The latest state of the language is called Fortran 77, and this week we have three books to review on the subject.

Top of my pile is a US publication, *Problem Solving with Fortran 77*, which gives a comprehensive coverage of the subject, but I found it largely unreadable. Useful no doubt as a reference book, it fails to make its impact as a tutor or bedside companion.

Perhaps its appeal is not helped by over-liberal use of bold type and italics, and often poor layout of diagrams and sample programs.

The book makes a case for Fortran as a language suitable for commercial as well as traditional scientific applications, and rightly gives plenty of space to the new character and file handling facilities.

But the exercises I found somewhat pedantic and boring, and it is frustrating that the interesting questions are not answered at the back of the book.

Fortran 77, A Top-Down Approach is another US publication, and this I found clearer, but again not really suitable for a cover-to-cover read. However it does make an attempt to take the reader into the language from first principles starting with a discussion of peripherals and processors and coming on to problem solving techniques in Fortran.

This second book tends to focus more on numerical applications of the language than the first, but does have a useful section at the end on advanced use of input and output facilities such as variable length record treatment, and direct file access.

My favourite of the three, is the only one written in the UK, *A Course in Programming in Fortran*, revised to incorporate Fortran 77. Perhaps I like it best because it is the shortest, running to just 183 pages, compared with 352 for the first book, and 466 for the second. Certainly this last volume does not look exciting, and the type used seems to jump from standard to italic and back again without rhyme or reason, and without contributing to the clarity of the text.

But I like the no nonsense, terse treatment of the various language facilities, also the exercises, which mainly consist of writing programs, with suggested solutions listed at the back.

More advanced language features are left out, and non-numerical applications are rather neglected. But then I suppose that brevity and completeness are not wholly compatible.

Philip Hunter

PRODUCTS

PDP-11 micro with built-in Winchester storage

HAWKE Electronics, the Digital Equipment distributor, has announced the Micro/PDP-11 microcomputer. Prominent among its features are built-in Winchester storage and versatile packaging.

This fully-fledged PDP-11 is designed around an enhanced LSI/1123 CPU and provides the basis of a low-cost, multi-user PDP-11 microcomputer system with the support of a broad range of microcomputer software.

Included as standard is 10 Mbytes of built-in Winchester storage, with an 800 Kbyte removable dual minifloppy.

It also has 256 Kbytes of main memory and features 22-bit addressability.

The component parts of the Micro/PDP-11 are complete in one enclosure which is available in a choice of three packaging styles. This allows the unit to be either rack-mounted or positioned on, or under, a table.

Hawke Electronics (CW), Amotex House, 45 Hanworth Road, Sunbury-on-Thames, Middlesex. Tel: 01-979 7799.



The Micro/PDP 11 from Hawke Electronics.

Kennedy launches a tri-density tape system

KENNEDY has introduced the Model 9400, claimed to be the first low-cost tri-density tape system which features data densities of 6250, 1600 and 800 cpi and offers the ability to store up to 180 Mbytes of data in GCR format while maintaining compatibility with PE and NRZI recorded tapes.

The Model 9400's modular design provides for easy interface to a wide range of controller interfaces, including the Picosub interface, says Kennedy.

The tri-density system operates at 45 ips in the GCR mode, with an average transfer rate of 281 Kbytes per second. Tape speed for PE/NRZI formats is 75ips at a data transfer rate of 120 Kbytes per second for PE format and 60 Kbytes per second for NRZI format.

The tape system has full start/stop capability with on-the-fly operation and full edit capability.

Built-in data buffering allows the tape systems to operate at reduced transfer rates to provide interface compatibility.

The Model 9400 is designed to achieve maximum reliability. The GCR format has two track error correction.

On power-up or master reset the 9400's on-board processor initiates extensive verification of each subsystem in the drive and the servo system may be tested offline.

Kennedy International (CW), McGraw Hill House, Shopperhangers Road, Maldenhead, Berks SL6 2QL. Tel: (0628) 73939.

Another major feature is the economy of plain-paper printing, and Bell claims that the 745XT can be 50% less expensive to operate than thermal paper printers.

RCA's lease/service package for the 745XT starts at \$60 a month.

RCA Service Company (CW), Route 38, Cherry Hill, N.J. 08358. Tel: (609) 338 6437.

Portable datacomms terminal

THE RCA Model 745XT is a data communications terminal offering portability, and plain-paper capability.

The terminal is designed to handle a variety of applications from TWX/Telex communications and electronic mail to automated distributor networks and sales force automation, according to James H. Bell, manager of data services product marketing.

The unit measures 14 x 12 x 4 1/2 inches and weighs 12 pounds with carrying case.

The 745XT features instant database access, offline editing, direct distance dialling, standard phone jack or acoustic coupler hook-up, standard typewriter keyboard, 14 alternate print fonts, 16K RAM capability, and 80 or 132 column formats.

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RCA Service Company (CW), Route 38, Cherry Hill, N.J. 08358. Tel: (609) 338 6437.

Sophisticated software

A NEW release of an RSX-11 compatible data acquisition and control software package has been announced by Data Translation.

RSXLIB Version 2 adds support for LSI-11 compatible, programmed I/O, analogue input and analogue output devices available from both Data Translation and Digital Equipment Corp.

Previous versions of RSXLIB supported DATA data transfer devices from Data Translation for both LSI-11 and PDP-11 (Unibus) systems.

Data Translation (CW), 430 Bath Road, Slough, Berks SL1 6BB. Tel: (06286) 3412.

Control system takes the biscuit

AN advanced quality control system has been installed at United Biscuits' Tollcross, Glasgow factory by Process Computing. The system, which has taken nearly two years to develop, features a series of PCL Micro Manager single-board computer modules.

With a DEC PDP-11 host computer, these provide comprehensive monitoring of output from five UB biscuit production lines.

The installation is the first stage of a major project which will eventually result in the computerisation of 11 of the packaging lines at Tollcross.

Based on a specially-adapted DEC PDP-11 with 96K core memory and additional 18 Mbyte Winchester disc storage facilities, the system is capable of producing detailed management reports and can show simultaneous trend comparison of up to three different parameters. Data can be stored for later generation of printed reports and the computer is able to maintain records on hourly, shift and daily production.

Records are maintained for two weeks on a shift basis and 48 hours on an hourly basis, for immediate recall on a screen or printer.

Each of the five packaging lines is equipped with one of the PCL Micro Managers. These units, based on the recently-introduced DEC Falcon SBC-11/21 computer,

have been developed by PCL to provide low cost and accurate computerised control throughout the production or packaging process.

Full colour Incecolor VDU terminals and function only keyboards are also provided, allowing line operators to view the system's colour graphics displays by making only a single key depression.

The Micro Manager units are housed in wall-mounting enclosures installed close to each production line.

The PCL system has been designed so that each Micro Manager acts as an intelligent satellite of the host computer. This means that the units provide continuous local monitoring of each line.

Process Computing (CW), Wadlow Road, Harlesden, London NW10 7NY. Tel: 01-961 6466.



Line operators can view the Process Computing system's colour graphic displays by making a single key depression.

Open access storage for computer media

TWINLOCK has extended its Multi-Stor range with open access storage frames and a new design of chassis combining both shelf and suspension storage.

Designed for locations where ease of access is paramount, the range starts with a basic 42in. unit which can be extended horizontally, vertically, or made into a gondola, with units connected back to back.

The range can be used for storage of all types of computer media, as well as for traditional lateral filing. A single 75in. unit will hold a full five rows of 11in. deep computer printout binders.

It is designed to co-ordinate with Twinlock's Multi-Stor range in chocolate and cream and will accept metre-wide Multi-Stor cupboard fittings as well as the new shelf chassis.

The new chassis fits all the

Multi-stor range of cupboards and combines shelf storage with Crystal Lateral of printout binder storage in one fitting, reducing the number of different chassis required for multi-media storage.

The open access storage units are easily assembled, says Twinlock, and screw-in adjustable feet cope with slight inconsistencies in floor levels. The kits are supplied with illustrated instructions and an allen key for quick assembly. Multi-Stor fittings including spare chassis and shelves which clip on to the brackets supplied are available separately.

Prices start at £21.44 for the basic 42in. kit, which includes two sets of brackets.

Twinlock (CW), 36 Croydon Road, Beckenham, Kent BR3 4BH. Tel: 01-650 4818.

Graphics for DECwriter

A VECTOR Graphics enhancement for the LA-120 DECwriter III is announced by Selanar. The SG120V add-on features high quality graphics while not making any changes to the LA-120 and retaining all the existing alphanumeric capabilities. It offers the user the Selanar Graphics native mode for vector drawing and the 4014 Tektronix emulation command structure with the ability to dump the graphics back to the CPU.

While communication between

SG120V and LA-120 is preset at a chosen baud rate, the baud rate to the host computer or modem may be selected with DIP-Switch.

The field installable graphics add-on enhancement for the LA-120 sells for less than \$1,000 list price. Resolution of the SG120V is 165 dots/inch x 72 dots/inch.

Selanar Graphics' UK distributor is Datatrade.

Datatrade (CW), 38 Billings Road, Northampton NN1 5AW. Tel: (0604) 22289.

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BYTE Magazine June '83: "A lion packaged as a house-cat!"



Sabre's printer has 16 columns

A 16-COLUMN matrix printer has been added to Sabre Computers' Ultra Compact Printer family.

The new UCP-16 is 80mm wide, 68mm high and 75mm deep. It runs at 17 characters a second from a power supply of just five volts.

Like the earlier UCP-24, the new unit has a 64-character upper-case set and accepts serial and Centronics parallel data.

Other features include graphics, self-testing and the ability to print characters in different sizes. The mean time between failures is put at 500,000 lines.

The standard price is £99 - or "a lot less" to systems builders ordering large quantities.

Sabre Computers International (CW), 60 High Street, Caterham, Surrey. Tel: (0883) 40242.



Sabre's UCP-16 printer is just 80mm wide.

Industrial micro hits UK

A RUGGED industrial microcomputer is now being sold in the UK by a new company, Data Beta, formed to develop and market industrial control and automation products. The microcomputer, called the Muse, is made by Morgan-Smith Electronics, a specialist in analogue and digital instrumentation systems.

Muse consists of a Motorola 6809 processor, a 58-key keyboard, a 16-key keypad and a 320-character display. Different types of random-access and read-only memory can be added, depending on the application.

Standard analogue interface cards are available for up to 33 channels, while 24 sockets are included to accommodate optically-coupled solid-state input and output modules.

RS232 and 20-millamp current loop serial interfaces are also provided.

The unit is contained in a tough, waterproof housing. It can be used in damp, dusty or otherwise hostile conditions.

Muse is designed for use on the shop floor both as a stand-alone machine or as an intelligent terminal.

Data Beta (CW), 23a Buckingham Avenue, Slough, Berkshire SL1 4QA. Tel: (0753) 75933.

Mail houses can reduce list costs

A LIST management system called AnaData has been introduced by TDP, the Coventry software and systems house. The company claims AnaData gives users powerful list-handling techniques previously available only on large computer systems.

For handling lists of 10,000 to 10 million records, says TDP, AnaData's interactive flexibility - as distinct from conventional batch processing - can make it significantly less expensive than other in-house or bureau systems both in equipment and operational costs.

On the Post Office rebate scheme alone, TDP quotes probable savings, for a user negotiating a 33% rebate, of about £155,000. This is based on a twice-yearly mailing to 1.5 million customers.

One of AnaData's main features is its de-duplication facility. Com-Data is said to be capable of saving £75,000 on de-duplication costs, again based on a twice-yearly mailout to 1.5 million customers, and an all-in unit cost for the direct mail piece of 50p. Such a saving is calculated on a list containing only 5% of duplicated records.

On mailings of this size, the system could pay for itself in four

months. An AnaData system is designed to be used in a normal office environment and using existing staff. Only the simplest training is required to create and update information.

There is no need to put special editing symbols into names and addresses for the computer to interpret the position of key words. Entries are typed in plain English.

The system does not depend on the use of a post code in a list, so names and addresses can be recorded with or without one. If a post code is entered, then AnaData will check that it is correct.

When the post code is known, it can be entered before the name and address. The required town and county names will then be displayed automatically on the operator's screen. This saves typing some 25 characters and avoids the town name being misspelled or the wrong county name being used.

AnaData can also produce accurate and topical reports, enabling management to evaluate trends and incorporate results in more efficient planning. Records can be produced as

hard-copy reports and the use of Report Writing modules allows the system to select particular records or fractions of files and keep a record.

The system can print file directories, summaries and management information at many levels. Complex reports can be pre-specified and subsequently used in standard report-writing runs.

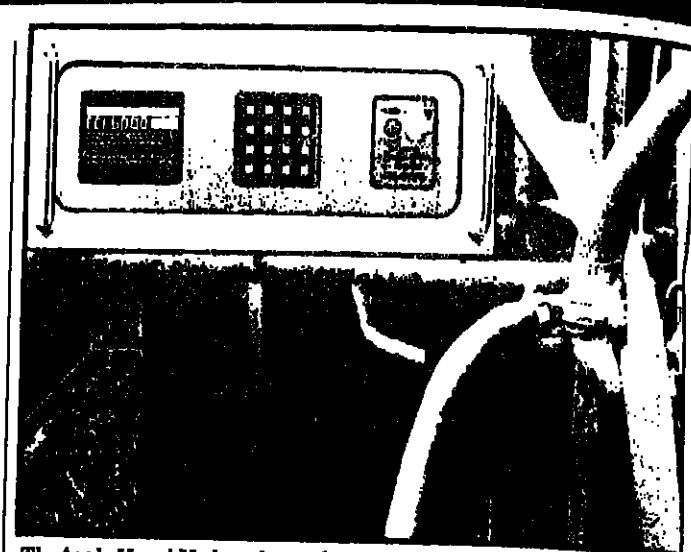
AnaData is based on hardware by Texas Instruments from its Business System range introduced last year.

The equipment ranges from the Business System 300, a multi-user system with 128 Kbytes of memory, expandable to 512 Kbytes, to the top end of the Business System 800 series, providing up to 450 Mbytes of on-line disc storage.

The entire system is operator friendly, the operator being able to revert to simple helpful instructions when meeting with any particular difficulty.

Cost of a typical AnaData hardware and software system is in the region of £25,000.

TDP (CW), 7 The Quadrant, Coventry, West Midlands CV1 2EL. Tel: (0203) 26788.



The Apple II and IIe have been adapted for industry.

Suiting Apples to industry demands

FLEXITALLIC Controls has adapted the power, ability and cost of the standard Apple II and IIe to the demands of industry.

No unreliable or vulnerable magnetic discs or tapes are used. The unit incorporates a solid state board and is housed in a dust- and splash-proof cabinet with VDU and keypad built into front panel.

One version, FCL 6000, meets IP65, the standard for control equipment, and is claimed to be ideal for data acquisition analysis and control applications in aggressive industrial and

laboratory situations.

FCL 6000 can be programmed directly using a separate, plug-in full keyboard. Alternatively software can be developed offline and plugged directly into the computer. It is compatible with all Apple Support Cards.

Three versions are currently available. FCL 6000 is housed in either heavy gauge 16 SWG or all stainless steel cabinet, and FCL 6010 is rack-mountable.

Flexitall Controls (CW), Delt Road, Rochdale, Lancashire OL12 6RZ. Tel: (0706) 34348.

Hand-held terminal has total of 38 keys

DATA BETA has been selected by Intertek Inc of Japan as exclusive UK agent for a new hand-held terminal, the Profort 801.

This tiny terminal is functionally equivalent to a standard VDU and differs only in the size and keyboard layout, says Data Beta. The 801 can display two lines of 16 characters on its LCD screen, and a full 128 line display memory (2,048 characters) is included in the unit.

Data Beta recommends that small alterations to the sections of the program that handle screen formatting be made to take full advantage of the device.

Keys allow the user to move the window, formed by the LCD display, through which the actual screen is viewed, so that the whole screen stored in the display memory can be seen by scrolling through it.

The terminal has a total of 38 keys which will generate the full ASCII character set and control codes as well as certain dedicated commands.

The Profort 801 is equipped with an RS232 port operating at all standard speeds between 30 and 9,600 baud.

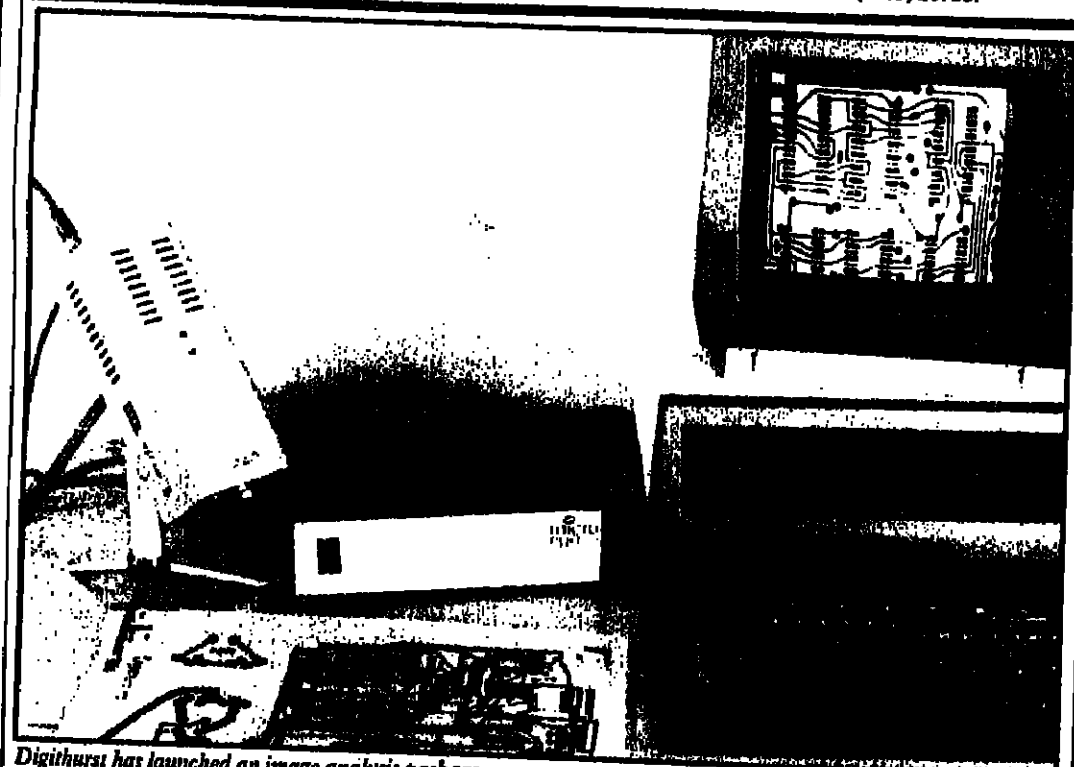
Both 20mA current loop and TTL outputs can be supplied as an option.

The terminal weighs 400g, and measures 184x94x36mm.

Applications for the Profort 801 include field maintenance, testing and factory control where a normal VDU would not be practical because of its size and weight.

Data Beta (CW), 23a Buckingham Avenue, Slough, Berkshire SL1 4QA. Telephone: (0753) 75933/4.

The Profort 801 hand-held terminal.



Digithurst has launched an image analysis package.

Image analysis enhanced

DIGITHURST has launched an image analysis package to run on the Sirius microcomputer. The package is an enhanced version of Digithurst's MicroSight I Vision System.

The enhancements include an increase in resolution to 256x256 pixels and the use of recursive filtering to reduce the effects of random interface experienced with video cameras.

The MicroSight image analysis package has also been implemented on the Sirius and allows the user to manipulate images by moving and expanding sections of

the screen, as well as the usual features such as dimensioning and area perimeter measurement.

Applications include input to CAD, graphic design, image analysis, forensic analysis, low cost medical imaging and cartography.

Costs are £495 plus VAT for MicroSight I and £295 plus VAT for MicroScale packages.

Digithurst has also released a colour version of its MicroSight I Vision System for the BBC and Apple micros.

The package, which allows coloured images to be captured and displayed on the micro screen

and also stored on disc is intended for computer aided learning and graphic design applications of MicroSight.

The colour version uses a filtering system on a black and white camera and is also being offered as an upgrade to existing users of MicroSight I packages.

The colour version of MicroSight I is £595 plus VAT, which includes software, documentation, vision interface and camera.

Digithurst (CW), London Hill, Orwell, Royston, Herts SG8 5QH. Tel: (0223) 206926.



The Profort 801 hand-held terminal.

16/32 Bit Power Personal Computer. HP's Model 16 for Technical Professionals.

FOR DETAILS - 07341 89622 EXT. 4022
HEWLETT-PACKARD LIMITED
BYE Magazine June '83. "Also packaged as a course, call"



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COMPUTER WEEKLY September 8 1983 39

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Sales Executives

London & Home Counties £20,000+ On Target Earnings + Car

Kienzle Data Systems Limited is a well established international computer manufacturer with affiliates located throughout Europe.

It is, without doubt, one of the market leaders in the field of hard disk based, interactive mini computers.

They now wish to further increase their sales teams including the following areas of specialisation.

- * Printing and Publishing
- * Property Management
- * Solicitors
- * New Accounts
- * Existing Users

You will have a proven track record in selling capital goods and a practical accounting

background. An additional advantage would be sales experience of disk based, commercial/financial mini systems.

The successful candidates will receive an extremely good earnings and benefits package and the opportunity to join a progressive industry leader.

Find out more - phone Knight on 01-491 4706 quoting ref: RC319



Programmer/Analyst

West London

£11,500

Our client is a privately owned and well established company with representation worldwide whose business is taking reservations for a series of hotel chains.

Their London based Data Processing department is currently replacing existing time sharing services with a distributed network of micro and mini computer systems to be operational worldwide.

In order to meet the demands of further long term plans, our client is seeking a self motivated individual who can demonstrate a high degree of programming skills coupled with some exposure to the design of commercial applications.

The successful candidate must have the confidence to learn a variety of programming languages across a broad spectrum of hardware.

Among the exciting aspects of this job is the opportunity for foreign travel. To find out more contact Knight on 01-491 4706 quoting ref: RC317.



Programmer/Analyst

N. London

£9,500+ benefits

Tektronix UK Limited is part of an international manufacturing company with subsidiaries located throughout the world. Tektronix designs, manufactures and markets a wide range of electronic equipment for all sections of industry, research and commerce.

Their North London computer centre houses a VAX 11/780 supporting a variety of commercial applications.

The Programmer/Analyst will be initially involved in major enhancements to Transaction Processing and Ledger systems.

Candidates will have a sound COBOL programming background with some analytical skills and should be able to demonstrate self motivation and the capability of liaison with

users. A knowledge of VAX hardware under VMS would be a distinct advantage. Find out more - phone Knight on 01-491 4706 quoting ref: YY181.



COMMITTED TO EXCELLENCE

Analyst/Programmers

Essex

to £11,500 + Profit Share

Eastern Data Processing (EDP) is a computer service company covering all aspects of data processing from micro computer systems to mainframe management and support.

EDP's continued growth within the Commercial and Financial sectors has led to the need for additional Analyst/Programmers.

You will have a minimum of twelve months ICL COBOL Programming experience preferably using ICL ME29 hardware. In addition, you should demonstrate initiative, self-motivation and the ability to work under pressure.

At EDP, you will be engaged in a development role which will include a variety of real-time and networked systems for ICL ME29 and TORCH microcomputers.



EASTERN DATA PROCESSING LTD

Real-Time Software Development (Leisure software micro computers)

Central London

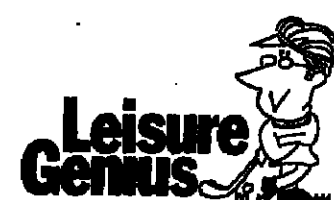
£11,000 + Bonus

Our client is engaged in the development of an exciting range of software products encompassing the computerisation of popular board games for 8 and 16 bit micro computer systems.

They offer an excellent opportunity to enter a new and rapidly expanding industry at ground floor level.

As a senior member of a team utilising state of the art real-time software techniques you will be actively involved in the following development areas:

- * Voice recognition/synthesis
- * Animated graphics
- * Games strategy
- * Educational software



Analyst/Programmer

City

£ Negotiable + Mortgage Subsidy

The Data Processing department of this leading Merchant Bank utilises a wide range of PDP 11/70 hardware to develop Banking and investment applications under AIMS.

The Analyst/Programmer will be a member of a team with principle responsibilities to analyse new systems and develop, install and maintain computer programs.

Candidates will have a minimum of eighteen months experience as an Analyst/Programmer gained in a Banking and/or AIMS environment.

The office premises are modern and pleasant and situated in a central position with easy access to the Home Counties.

You will be offered a competitive negotiable salary with an excellent benefits package that will include a subsidised mortgage scheme. Find out more - contact Knight on 01-491 4706 quoting ref: YY180.



Confidential Reply

Super Personal 16

'MBA'

THE INDUSTRY'S LEADING INTEGRATED MANAGEMENT SOFTWARE

John M. Little



16/32 Bit Power Personal Computer. HP's Model 16 for Technical Professionals.

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To find out more about advertising in this feature, contact Neil Williams on 01-491 4706.

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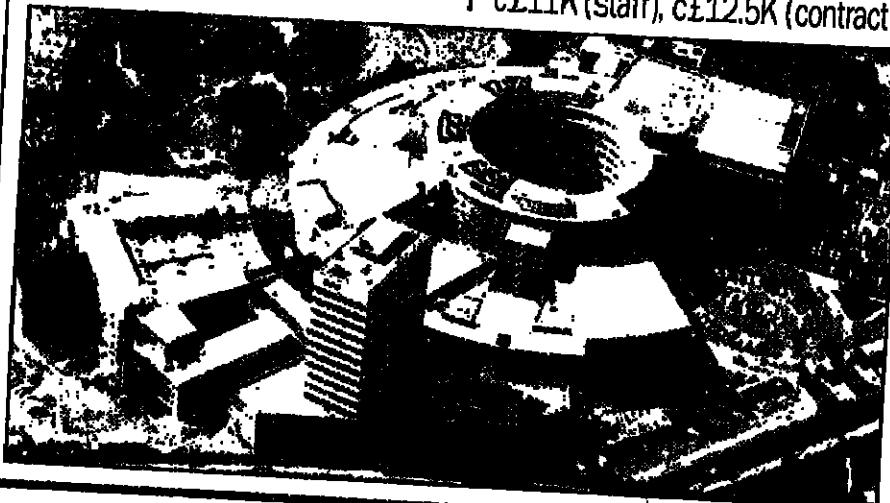
Sept 8th 1983

10.55 BBC TV

If you think this advertisement bears an uncanny resemblance to a page from a well known magazine, you're absolutely right.

But instead of telling you what's on, it's here to tell you what's in — what's in a career for you with the BBC at Television Centre.

You can look forward to variety, a stimulating environment and the chance to work with other professionals — providing vital computer services to all areas of television, including on-line video and film libraries, programme costing and transmission, artists' contracts, Breakfast Television and BBC Enterprises Ltd.



11.30 Project Analyst

c£12.5K (staff), c£14K (contract)

To take responsibility for project management. Must have at least 4 years' experience at Systems Analyst level, preferably gained in an ICL VME/B environment, and on TP applications.

12.00 Systems Analysts

c£11K (staff), c£12.5K (contract)

Minimum of 2 years' as a Systems Analyst. Preferred experience to include one or more of the following: ICL VME/B or DRS, Harris, Hewlett Packard.

12.30 Analyst/Programmers

c£10K (staff), c£11.5K (contract)

At least 3 years' experience at Programmer level. ICL VME/B COBOL or George III COBOL essential.

1.00 Programmers

c£9.5K (contract)

Minimum 2 years' ICL 2900 COBOL programming experience, preferably using DRS.

1.30 Contract Posts

Where a contract salary has been quoted, the contract will be of 2 years' duration and is not pensionable, but otherwise attracts the same benefits as a permanent position.

2.00 Benefits

In addition to the attractive salaries, there is a generous 5 weeks' holiday entitlement and opportunity for career advancement within data processing.

Staff may join the BBC's Club where there are attractive bars and lounges, with subsidised lunches or snacks and a whole variety of activities, ranging from Amateur Dramatics to Badminton, Golf to Squash and Table Tennis to Yoga. There's a lively social atmosphere and you're encouraged to use as many of the facilities as you wish.

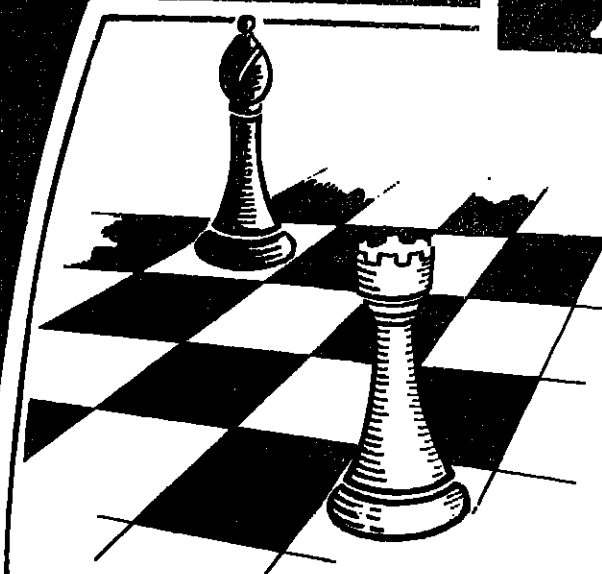
9.30am-6.00pm Contact

To find out more about any of these posts, initially please contact Linda Berry on 01-576 1693/1393 who is waiting to talk to you between 9.30am-6.00pm, or write to her for an application form to BBC Centre House, London W12 7RJ indicating which post you are interested in.

BBC tv

We are an Equal Opportunities employer.

X25 Network Control



Play the Game with Confidence and Authority

Your move to a rewarding career in a major networking project!

The Company: Our client, a large and successful computer manufacturing company, is about to embark on a major new project to control one of the largest high-speed networks in Europe. Based in the attractive Hertfordshire green belt area within easy reach of London, the company has an outstanding track record in communications development. The work is challenging and will suit motivated professionals who seek a rewarding career.

Communications Consultants to £18k.

To be responsible for design studies, system design and sales support activities on general networking and communications projects. Candidates should be able to show at least 8 years experience of the computer industry, including the design and installation of communications networks and extensive client contact at the highest levels.

Team Leaders to £14k.

To carry out systems design and to lead a team of programmers on the implementation of projects arising from such designs. There will often be an element of client liaison in these positions. We require at least 6 years experience, including the design and installation of systems with some communication content and responsibility for development staff.

Senior Programmers to £11k.

Successful applicants will design and implement systems software under the guidance of the team leaders and will supervise the work of programmers within the team. At least 3 years experience is required which should include involvement in the successful implementation of a significant project.

Usual large company benefits including relocation assistance where appropriate.

Evening & Weekend telephone numbers:
Terry Harvey — Gt. Missenden (02406) 4705
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HR

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HR

FOR SOMETHING A LITTLE DIFFERENT...

If your Sales or Marketing career to date is perhaps a little run of the mill, one of these positions could offer a welcome alternative. Currently our Sales and Marketing Division are handling some 60 assignments for similar "characters", these are just four.

INTERNATIONAL SALES EXECUTIVE — MICROS

Central London Base
Experienced Sales Executive required to develop new business for our client overseas. Proven track record required in D/P/W/P selling directly or through distributors overseas.
Age range is likely to be 28-35 and applicants must relish a start up situation. Business acumen combined with drive and technical expertise are essential attributes.

SALES OPPORTUNITIES SUPER MINI MANUFACTURER

On target earnings £24k
A leading 32 bit computer manufacturer is seeking to expand its salesforce. They require in particular, individuals with experience of Office Automation, C.A.D. or distributed data processing. Ideally you should have a proven sales track record, but pre-sales systems analysts wishing to move into sales should also apply.

SALES ENGINEERS MASS STORAGE DEVICES

Home based
North of England & S. Home Counties
This peripherals supplier needs two experienced sales people to sell Disc Drives and Controllers to microcomputer companies throughout the UK. The ideal background would be experience of selling peripherals in a similar environment. Applicants must be highly self motivated and willing to exploit the large geographical territories involved.

SALES SUPPORT CONSULTANTS SOFTWARE HOUSE

£15-£18k
The Professional Services Division of our client requires consultants with 10 years' plus experience in D.P. This should have been gained in a sales or sales support role with a software house or a manufacturer. Experience of IBM, HP, DEC or ICL hardware is preferable as well as Database systems.
Consultants need to be highly motivated individuals who can contribute effectively in the pursuit of major new name business.

Please telephone David Jones to discuss your career potential on
Lewes (07916) 71271 or write to him at the address below

The Electronics Recruitment Company

Temple House, 25/26 High Street, Lewes,
East Sussex BN7 2LU. Tel: Lewes (07916) 71271.

WE'RE LOOKING FOR COMPUTER PERSONNEL WHO WANT TO WORK ON CONTRACT

If you are thinking of going contract or if your current contract is ending soon **we would like to hear from you.** PFS was established 18 months ago as services and consultancy subsidiary of the Euribon Group. We are currently providing project teams, consultancy and individual computer staff to some of the country's leading companies to work on the various installations of differing manufacturers systems throughout the United Kingdom. If you wish to be associated with a growing and respected company please send your c.v. or telephone the following:

Neil Dennis
or Yvo Henneker-Heaton
PFS Computing (UK) Ltd.
Barker Gate House
Belward Street
Nottingham, NG1 1JY.
Telephone: 0602 580935
Or Derek Wadham at:
Thatcham (0635) 66923.

Project Facilities Services Computing (U.K.) Ltd.

MOVE WITH US TO NEWBURY

SALESMAN Circ 18K + car

We are seeking to recruit a salesman to sell high volume desk top and multi-user computer systems, both to larger organisations and to first time users. The emphasis is placed on providing system solutions, and not merely hardware sales. There will be no defined territory, although it is envisaged that the majority of business will be generated in the South of England.

The candidate will

- have two years sales experience in office products or computer systems.
- be between 20 & 30 years of age.
- have the ability to develop the sales & marketing activity of this progressive company with the guidance of the Sales Manager.

If you are an energetic self starter who is looking to progress his career by joining a successful expanding company please call Barbara Allen at our Reading office.

Our client is a young and expanding company with a reputation for offering quality single and multi user turnkey systems to government departments, national and multi-national companies. Their new exciting range of interactive software products are based on 8 and 16 bit micro computer systems, running under CP/M, MP/M, MS-DOS and UNIX.

Due to their outstanding success they are relocating to new headquarters in Newbury, and are looking to employ several young, energetic individuals whose desire is to work for a small but highly successful organisation.

SENIOR PROGRAMMER To £12K

We require a Senior Programmer to take responsibility for a team of programmers and provide an interface between this group and the board of directors. This demanding and responsible role requires:

- Two years + COBOL, preferably, but not essentially on minis and micros.
- Sound software development skills in a commercial environment, including some analysis and design.
- A strong self motivating and enthusiastic team worker.

• The ability to grasp fundamentals of accounting and management information systems.
This exciting position offers the opportunity to participate in a company with high growth potential, personal development and career progression. For further information please contact Keith Taylor at our Reading office.

PROGRAMMER To £10K

An energetic self starter is required to complement our young and expanding development team. Systems will be based on a wide range of micro computer systems, operating systems, and database management systems. Skills required are:

- one or two years commercial programming COBOL
- some analysis exposure
- ability to work as part of a close team
- adaptability to changing circumstances and requirements

This is a real opportunity to enhance your career prospects and work in a challenging but rewarding environment. For details of this post please contact Keith Taylor at our Reading office.

The main benefits will derive from working for a company whose drive and enthusiasm is coupled with a highly professional attitude and excellent product range. They offer exciting challenges and ground floor opportunities to become an integral part of a successful and expanding company.

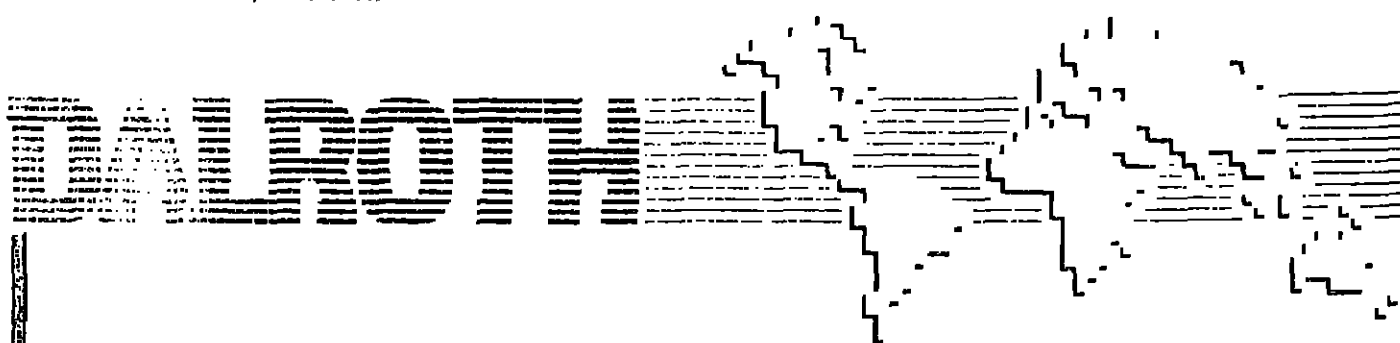
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MCL

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NETWORK MANAGEMENT SOFTWARE PROTOTYPE DEVELOPMENT PROJECT

Can you . . .

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- ★ PLAY YOUR PART IN GROWING THE COMPANY
- ★ JUSTIFY A SALARY UP TO £15,000

Are you . . .

Capable of investigating methods of Network Management and Control; designing and developing a tool that will enable your team to deliver software for a new concept of Network Management.

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Have a good degree and experience in the design and development of REAL TIME COMMUNICATIONS SYSTEMS.

Ideally you . . .

Would have experience in any of the following:

- ★ PACKET SWITCHING
- ★ LOCAL AREA NETWORKS
- ★ MESSAGE SWITCHING
- ★ GATEWAY EXCHANGES
- ★ PRIME, PDP, VAX or TANDEM

The project . . .

Is based in The West on client premises, though later some development may be brought in-house (also in West).

The positions . . .

are for both:
TEAM LEADERS AND TEAM MEMBERS

The company . . .

Offer an ideal opportunity for enthusiastic and well qualified professionals to enhance both their own and the company's reputation at home and abroad.

For further information, please contact Jenny Dalrymple-Hay or Ian Murray West on 01-493 2947, from 8am to 10pm Monday to Friday or weekends Ian Murray West on Milton Keynes (0908) 663415 quoting Ref. 5002.

DALROTH & PARTNERS LTD, 4 HALF MOON STREET, LONDON W1 ● TEL: 01-493 2947

SENIOR SALES

£27,000 ON TARGET SIERRA 2.0GL

A doubling in T/O to over £33m and a fourfold increase in trading profit are the rewards reaped from commitment, investment, professionalism and hard work for this UK supplier of major systems.

They have succeeded in establishing an enviable customer base with household names in oil, finance, retail and distribution, manufacturers and the public sector. 1984 will see the development of this, including the addition of several new major names.

Quality has been their hallmark in service and in the selection of their existing Salesforce, all of which are earning in excess of £40,000 p.a. Their growth now depends on further investments in strong sales professionals with a track record in DP Sales and with the motivation to take them above the competition.

If this opportunity interests you — phone Norman Wright, Ref: NS.159.

AB EXECUTIVE (WEYBRIDGE)
(0932) 41321

8100

PERM-NEG. TO 10K — SHEFFIELD

SENIOR ANALYST
SENIOR PROGRAMMER
SENIOR ANALYST/PROGRAMMER

Minimum of 5 years' experience to include:

- ★ IBM Mainframe OnLine Systems
- ★ Manufacturing/Production Control
- ★ Project Planning/Estimating
- ★ Minis/Micros/Networking (an advantage)

To work with a highly skilled team developing systems, using advanced DDP techniques based on a network of minis (IBM 8100) and micros (CIFER, RAIR, PS) interlinked to the GMS DATA CENTRE (IBM 3031).

GMS Computing Limited

Smithfield House, Blunk Street, Sheffield S1 2BU
Tel: 0742-730191. Quote DDP/JC

GMS

DISABLED LIVING FOUNDATION

Analyst/Programmer

An exciting and prestigious post in a national information service on disability

Applications are invited for a new post with the Disabled Living Foundation's Information Service for one year with possibility of extension.

The duties of the post will be concerned with the start up and development of a computer-based PDP 11/23 Information storage and on-line retrieval system where knowledge of databases will be relevant. A secondary task will be to extend the use of the computer in administration of the Foundation's work. The project has attracted funds from the Department of Industry.

Salary: £9,000-£10,000.
Application form and further information from: The Director, Disabled Living Foundation, 346 Kensington High Street, London W14 8NS. Telephone: 01-602 2491.

URGENT CONTRACTS

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98-100 HIGH ROAD, ILFORD, ESSEX IG1 1DS

GLC

Working for London

Computing Co-ordinator

£11,880-£13,353 inclusive

This position is within the Central Support Group of the Scientific Services Branch, which provides a consultancy service for other local authorities and public bodies as well as other Council Departments.

The Branch makes considerable use of minis and micro's and links into the Council's IBM 3081 mainframe for data analysis, scientific calculations and information storage and retrieval. It is also the site of a Department of Industry sponsored office automation trial, involving some 40 Rank Xerox workstations.

The Co-ordinator will be required to anticipate and assess the Branch's changing needs and recommend how these should be met, and to assist users and liaise with suppliers and the Council's Central Computer Service. Widely based experience in computing is essential. Good communication skills and the ability to deal sensitively with staff at all levels are also important.

Reply to: Director-General's Department, Ref. 139, Greater London Council, Room 204, The County Hall, SE1 7PB or telephone 01-633 2390. Closing date: 23rd September 1983.

The GLC welcomes applications from all sections of the community, irrespective of an individual's sex, ethnic origin, colour or sexual orientation and from people with disabilities who have the necessary attributes to do the job.

SENIOR APPOINTMENTS - £14K +

Information Systems Controller

New Appointment

CITY

Salary c.£35,000, car, benefits

for the leading division of a major international financial institution.

Responsibility is for computer services inclusive of DP, OA, WP, Telecommunications, and the strategy planning and development of a broad spectrum of information systems in pace with new technology, and user demand.

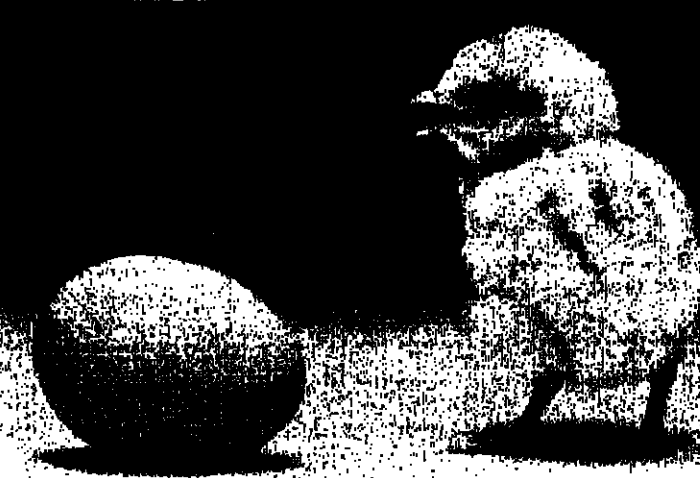
The requirement is for a seasoned information systems professional with a demonstrable portfolio of successful achievement in meeting complex business information needs via advanced technology in a major financial or commercial environment. A proven ability to communicate positively and objectively with user management at all levels, and manage the implementation and introduction of totally effective systems is vital. A university degree is essential.

Please send a fully detailed and comprehensive, handwritten or typed, CV and listing application systems and related hardware, software, staff resources in chronological order, to ANTHONY SPURR, Manager, Executive Selection Division, quoting reference number GW1147 at the address below.

BIS Applied Systems Limited
York House, 199 Westminster Bridge Road
London SE1 7UT
Telephone 01-633 0866

BIS Applied
Systems

WHAT COMES FIRST PRODUCTS OR PEOPLE?



هذا من الاول

With Ericsson the answer is both. By always putting people first, Ericsson has established some of the most user-friendly products in the world.

Ericsson also has the financial backing and the R & D resources to maintain the lead in the race to meet the world's rapidly developing demand for communications and information processing systems. A demand that requires a further increase in staff so that the best products continue to have only the best sales and service teams behind them.

Ericsson Information Systems Limited—part of the international telecommunications giant and pioneer of ergonomically designed terminals and data products—has won universal acclaim for its advanced, highly versatile products, many of which have been designed for compatibility with other manufacturers' equipment. An example is the Alfaskop multi-function workstation. Over 100,000 have already been installed world-wide with the majority connected to IBM computers.

By the end of the decade Ericsson Information Systems aims to be the leading supplier of office technology and information processing systems in the world. Its recently acquired Facit Data Products Division is already established as a leading supplier of terminals and printers to the OEM market place.

This lead can only be maintained with the right people. The kind of dedicated staff that see the value in investing their future in a rapidly expanding company, and of course in the rewards to be derived from that success.

Continued profitable expansion has resulted in the following opportunities for exceptional sales executives in the Business Systems, Communications, and Facit Data Products Divisions.

BUSINESS SYSTEMS SALES EXECUTIVES

£25,000 + per annum

Experienced Business Systems Sales Executives are required for our marketing operations based in Birmingham, Bristol, London and Stockport. Qualified applicants will have at least two years proven success in selling computer-based business solutions to top management in more than one industry. It is unlikely that anyone under 25 will have the technical and business acumen that we are seeking. An income package will be in the region of £25,000 + per annum.

COMMUNICATIONS SALES EXECUTIVES

£23,000 per annum

Two experienced Sales Executives, with proven track records in selling communication equipment, are required to further develop the penetration of Ericsson products into the U.K. market. The current product line includes a full range of communication and networking components, X25 packet switching systems, electronic mail and teletex. The income package will be in the region of £23,000 annum.

FACIT DATA PRODUCTS— OEM SALES EXECUTIVES

£20,000 per annum

Unprecedented growth in the OEM sales and support area has resulted in the creation of three new opportunities for experienced OEM Sales Executives to be based in Birmingham, London and Rochester. Qualified applicants will be experienced in the successful sales to and support of large OEM accounts. The income package will be in the region of £20,000 per annum.

Qualified candidates should apply in writing by sending career details to Mike Bateson, Marketing Director, Ericsson Information Systems Limited, Swan Office Centre, 1508 Coventry Road, Yardley, Birmingham B25 8BN. Alternatively use the coupon or telephone John Newcombe for OEM Sales 0634 401721. Martin Hunt for Communications Sales 01 422 3442. Ken Bridgen for Business Systems 01 422 3442.

I am interested in applying for the Sales Executive position in:

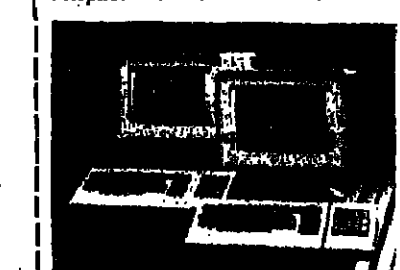
- ☐ Business Systems
- ☐ Communications Products
- ☐ Facit Data Products

Please send me an application form

Name

Address

Telephone



ERICSSON

Ericsson Information Systems Ltd
Swan Office Centre
1508 Coventry Road
Yardley, Birmingham B25 8BN
Telephone: 021-707 3050

SENIOR APPOINTMENTS - £14K +

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COMCAP will pay you top market rates.

● FACT
COMCAP pay your invoices the same day as they are received.

● FACT
COMCAP tell you the charge rate to the client.

The contracts listed below are just a selection from the many that we are currently staffing.

PROGRAMMERS HP3000 COBOL IMAGE	Berks.
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If you have the skills for these contracts or you are looking for a new contract in the next three months let Comcap be your guide to success.

For further details contact Colin Hill on 01-723 4053 or write in confidence to COMCAP RESOURCES, 26 Chilworth Street, London W2 6DT. Alternatively complete the FREEPOST coupon below.

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Job Title

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Office (include STD code)

Local Preferred

Overseas

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My own CV is enclosed

Post your envelope to: COMCAP RESOURCES FREEPOST LONDON W2 6DT NO STAMP NEEDED

SENIOR APPOINTMENTS - £14K +

Manager

Location: Rural, to the South of London

This is a completely new position created by the significant expansion of our client's Management Services Department. Our client is a major IBM user and we now wish to recruit someone to be responsible for the Computer Operations Department and the associated area. The successful applicant will be:-

- ★ Educated to degree level
- ★ A good man-manager
- ★ Dedicated to user service
- ★ A manager who has strong technical skills
- ★ A believer in themselves and their ability to maintain high quality output and control of their own staff
- ★ A good negotiator and someone who does not get ruffled under pressure.

The department controls, not only the daily operational function, but also the systems

programming area, and therefore the successful applicant will have the skills associated with managing this highly important and sensitive technical group. Applicants with experience of systems management or operations management could be equally attractive candidates.

This is an outstanding opportunity for someone to take control of a rapidly developing department and lead it from both an administrative and a technical point of view. If you believe you have those important talents of administrative skills and technical skills, please contact John Goldsmith at:-



A&A Consultants (Holding) Ltd., County House, 10 Little Portland Street, London W1N 5DF. Telephone 01-631 4184.

Please quote Ref. No. 405.

SALES PROFESSIONAL FAULT TOLERANT SYSTEMS

BASIC TO £15K (OTE £25K+) PLUS GUARANTEE AND CAR

CITY BASED MANAGEMENT POTENTIAL

The Fault Tolerant Systems market is one of rapid expansion and "state of the art" development. Our clients, already the second largest supplier of computer equipment in Europe, has enhanced its product range by establishing a specialist division to sell a new range of Fault Tolerant Systems in competition to TANDEM and CTL MOMENTUM.

Controlled by a Marketing Manager, the new group has a vacancy for a Professional Sales Executive with management potential. Candidates should have had experience in:

- ★ Data processing equipment sales
- ★ Systems sales with strong communications and software content
- ★ Knowledge of information systems available in the U.K., particularly to financial users

Please telephone BOB BOWER to discuss this excellent opportunity in more detail.

Ref: CW0809/1

HUTTON EXECUTIVE SELECTION LTD.
31 PALACE STREET,
LONDON SW1E 6HW.

TELEPHONE: 01-630 0434 (24 HOURS)

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We are also looking for:

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To install and maintain mainly IBM-PC and Z80-based systems. Training will be given on specific hardware. Knowledge of micro-based systems and electronic/electrical qualifications are essential for these positions.

PROGRAMMER - 7 to 12K

To develop and install a micro-based software distribution system. The successful applicant will be familiar with 8080/280 and CP/M. Knowledge of 8086/8088 and MS-DOS/PC-DOS would be useful but not essential. Proven ability would be considered as being more important than formal qualifications for this position.

SOFTWARE CONSULTANTS - To 12K

To support our successful sales team in researching, demonstrating and installing the latest in software available on the micro systems we sell. Knowledge of micro applications packages and the MS-DOS or CP/M operating systems will be a distinct advantage. A degree in computer or business related studies would be useful for this position.

If you are interested in joining a successful young company and growing with us, please write to us, or alternatively phone David Owens on 0892 45433.

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IBM AUTHORISED DEALERS FOR THE IBM PERSONAL COMPUTER

MERIDIAN CORPORATE MANAGEMENT

63 WIGMORE ST. LONDON W1. 01-486 2821

A major multi-national engineering group based to the West of London is seeking senior personnel for their technical services division

TECHNICAL SERVICES MANAGER

to £15,000+car+benefits

Our client requires a professional with at least five years' experience of IBM systems and extensive knowledge of MVS, CICS, DL/1, ACF/VTAM, ACF/NCP. You will be aware of the latest developments in the computer industry and will be able to evaluate and implement new hardware and software strategies. The ability to communicate with users and senior management, and the potential for self-development are important criteria. European and some US travel will be necessary.

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to £15,000 plus benefits

You will have a COPICS (or similar) background and an extensive knowledge of the DL/1 Database. Liaising closely with the systems development staff, you will provide guidelines and standards and ensure that availability, integrity and security of the Database is maintained. Already proficient, you will be looking to advance from your current position and will be seeking a career with a company dedicated to the development of sophisticated on-line systems.

MCM is an international consultancy with a background in sales, management and education in the computer industry. All enquiries are dealt with in the strictest confidence and you will be dealing with consultants who have an in-depth knowledge of all aspects of Data Processing gained at technical and senior management levels.

Telephone us now on 01-486 2821/2508 for further details

DALLAS · LONDON · PARIS · AMSTERDAM



The systems development division of a major multi-national engineering group based to the West of London is seeking two senior personnel. The company utilises IBM mainframes with MVS, CICS and DL/1.

SENIOR SYSTEMS ANALYST

to £14,500 plus benefits

Ideally you will have spent the last three years' as an analyst in a manufacturing environment and have a background in programming. It is essential that you are a good communicator and can control the development of sophisticated on-line systems. A knowledge of COPICS and Database is advantageous.

PROGRAMMING SUPERVISOR

to £14,500 plus benefits

If you have a good knowledge of COBOL programming in an on-line environment and experience of Database, this could be an ideal career opportunity. You will be responsible for a team of programmers working on a number of important projects. Liaising closely with the systems analysts you will ensure that programming standards are met and maintained. You will also have responsibility for training and the ability to control and motivate junior staff is important.

MCM is an international consultancy with a background in sales, management and education in the computer industry. All enquiries are dealt with in the strictest confidence and you will be dealing with consultants who have an in-depth knowledge of all aspects of Data Processing gained at technical and senior management levels.

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SENIOR APPOINTMENTS - £14K +

Advanced Telecommunication Systems South East c.£14,000 p.a.

Could you set up a project team by combining effective technical leadership with good man management? If so...

Your responsibilities will include organizing a team of engineers handling the detailed design and implementation of software for advanced voice and data systems.

Liaison with customers will include regular technical presentations and overseas travel. Reporting directly to the U.K. Engineering Manager you will receive a large degree of autonomy in maintaining the smooth running of the project and quality of the product.

To succeed - objectives must be established and must be met. However, you will not only be a task manager. A team of six to eight design engineers will require training, guiding and motivating through a highly sophisticated project.

The company has experienced a 70% increase in profits from 1982-1983 and is one of the most successful high technology companies in the world. The salary and benefits package is extremely competitive (with relocation assistance available where appropriate).

For more detailed information telephone Marc Zundel on 01-938 1804 (or 01-602 0685 evenings/Saturday mornings) or write to him with full career details.

All applications will be treated in strictest confidence.

Information Processing People

Specialist Recruitment Consultants

20 Kensington Church Street, London W8 4EP
Telephone 01-938 1804 Telex 22861

SYSTEMS FOR THE FACTORY OF THE FUTURE

West Midlands

Manchester

Over the past few years the development of manufacturing applications has been at the forefront of computing. Our Client, already an established Systems House with a significant installed base and considerable experience of supermini based manufacturing systems, is in conjunction with leading computer manufacturers, developing systems

Senior Analyst/Programmers (DEC/VAX computers)

c.£10,000

+ Car + Bonus + Benefits

Knowledge of interactive COBOL gained within a VMS environment is essential, backed up with a good exposure to manufacturing systems, and the ability to communicate well at all levels.

To join this exciting development team, all applicants must possess the drive and enthusiasm to succeed within a fast moving innovative environment. Obviously, in dealing with all levels of management and users, a pleasant personality is called for, and some travel within the UK, Europe and the USA will be required.

Step into this new age, and in exchange for your experience of interactive systems, our Client will reward you with an

West Drayton

to link production engineering, automation, CAD/CAM and materials handling to the commercial aspects of manufacturing.

To aid them in the development of this interactive package, they are currently seeking to recruit a team of professionals to work on the development, installation and enhancement of the system in both the UK and overseas marketplace.

Manufacturing Consultants

c.£11,000

+ Car + Bonus + Benefits

A thorough exposure to manufacturing systems ideally with a practical involvement in a production environment is required, combined with the ability to control and manage a small team of personnel.

Analyst/Programmers (Minicomputers)

c.£8,000

+ Car + Bonus + Benefits

Two to three years experience of mini based systems enhanced with a thorough understanding of interactive COBOL is a pre-requisite, gained in either a commercial or manufacturing environment.

excellent salary package including COMPANY CAR, PROFIT SHARING BONUS, non contributory pension scheme and health and life insurance, and give you the chance to work within a pioneering and exciting development area.

For further information, please contact our Advising Consultant Graham Utton on 021-236 3781 (24 hour answering service) or 05435 3782 (Evenings until 9.00 pm).

SENIOR APPOINTMENTS - £14K +

SALES - IBM PLUG COMPATIBLES

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4300 COMPATIBLE SYSTEMS AND ABOVE

BASIC £15K (OTE £30K+) PLUS GUARANTEE AND CAR

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MANY ADDITIONAL FEATURES
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The highly competitive plug compatible market-place relies heavily on two crucial factors; excellence of equipment and a keen pricing policy. Our clients are a huge multi-national with perhaps the largest range of information processing hardware and systems available today. A division of the company specialises in IBM plug compatibles and their price/performance advantage makes them highly competitive.

Two categories of sales position are available. The more senior in category one is to sell a range of compatible processors for database, communications and interactive applications which are fully compatible with the most advanced operating systems such as VM/SP, DOS/VSE and MVS/SP using the most advanced VLSI technology. The second grade is to sell a unique interactive display system using the latest microtechnology, creating total flexibility including BSC, SDLC/SNA systems. It also involves selling a range of IBM compatible personal computers.

Please contact BOB BOWER for further information. Ref: CW0809/2

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We are retained to fill this board position which takes revenue and profit responsibility and the management of 130 staff. It is a vital role, participating in the planning and direction of business overall, and taking multi-locational and multi-discipline (technical) staffing responsibilities.

Applicants should have broad experience which will include:

- ★ Management of at least 100 multi-disciplined staff, spread over several locations
- ★ Excellent record of successful conclusion of projects within pre-defined time and financial constraints
- ★ Total departmental and budgetary control
- ★ Implementation of standards, controls and methodologies
- ★ Ability to interface authoritatively with U.S. and U.K. contemporaries

WE SEEK A LEADER, AN ACHIEVER OF GOALS, A STRONG PERSONALITY, A PROFESSIONAL.

BOB BOWER is advising on this post and will be happy to discuss details, although a written application would be preferred. A full job specification is available and the timescale immediate. Interested parties are requested to apply at once. Ref: CW0809/3

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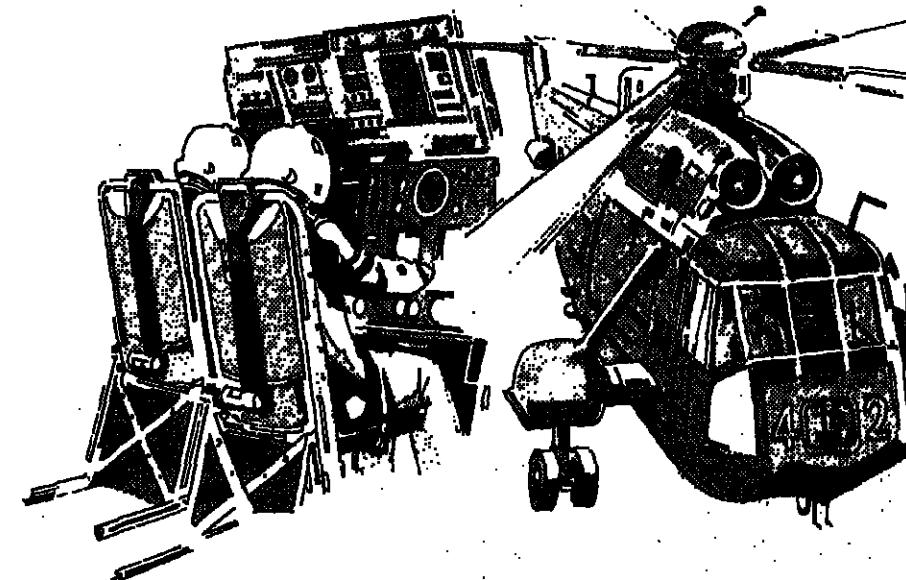
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To keep us at the forefront of training systems development we are very interested in hearing from SOFTWARE SPECIALISTS and SOFTWARE ENGINEERS with a degree in an Engineering Subject, Mathematics or Physics and successful experience in real time computer systems.

Informal discussion... please contact Colin Roberts, Career Development Manager, on 061-428 0771 during office hours and 061-428 0194 after 5 p.m. and at weekends, or write to Colin, quoting reference 329/34, at Ferranti Computer Systems Limited, Bird Hall Lane, Cheadle Heath, Stockport SK3 0XQ.

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You'll be working at the heart of a SNA driven environment based on distributed IBM 3083's and 4341's providing a powerful information management, retrieval and processing facility linking together all our U.K. depots, breweries, trading companies and headquarters operations. New project developments are in hand covering distribution, sales & marketing, manpower, and financial systems.

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Can you say the same about your programming career?



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£10 1/2k - £14 1/2k plus car
For this senior position, you'll need in-depth experience of IBM, a solid back-

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Programmers

£8k - £13k
Here, we are looking for men and women with a sound IBM background and, ideally, some knowledge of CICS or DL1 although training will be given, where necessary.

A competitive starting salary will be supported by an excellent range of benefits including, where appropriate, assistance with relocation to this attractive area. To find out more, phone Mike Sparkes on Reading (0734) 581166 for an informal discussion and the possibility of an early interview, or, send your cv.

to Mr. P.G. Kerry, Personnel Manager, Whitbread & Company PLC, Whitbread Court, Letcombe Street, Reading, Berks RG1 2HW.

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●Applications Programmers-

work with our analysts in small teams on an extensive range of projects: merchandise control for warehouses and branches, marketing, production, quality control and research, to name but a few.

They are responsible for new developments, enhancements to existing systems and providing daily support to users in the company's retail and industrial divisions.

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are responsible for planning, installing and maintaining software products in a variety of areas including MVS/SP 1.3, JES 2, DL1, CICS, VSPC and ROSCOE. Future plans include moving to positioning levels in readiness for MVS/XX and the implementation of application generator packages.

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These opportunities are open to able Applications/Systems Programmers with at least 2 years experience including IBM and COBOL or HP 3000 and COBOL. Knowledge of ASSEMBLER/CICS/DL1 is desirable for some of our vacancies.

Write to, or telephone, Janet Thompson, Employment Services, The Boots Company PLC, Head Office, Beeston, Nottingham, NG2 3AA. Tel. (0802) 581111 ext. 2321.

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Arab National Bank, offers excellent salaries contingent upon experience (14 month salaries per year) and attractive benefits program including: Furnished

- ☐ Operations manager
- ☐ Systems programmers
- ☐ Systems analysts
- ☐ Programmers

accommodation (or equivalent 4 month salary), Medical Care and ticket to the point of contract for applicant and his family.

Qualified applicants are urged to respond by sending resume and salary history (with copies of qualifications and experience history) in confidence to George Shaw.

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Recruitment Advertising

ANALYST PROGRAMMERS

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You will have considerable freedom of action and responsibility to act on your own initiative. The modularity of the overall system plan will enable you to see the results of your efforts in a reasonably short time.

These opportunities will interest people with around three years' or more COBOL and a good educational background (A levels or better) plus experience of on-line methods, systems design and some analysis. UNIVAC 1100 knowledge is required for the East London opening, but for Victoria minicomputer installation hardware background is unimportant since training will be given.

Please ring us quoting reference S23 or write briefly and we will tell you more about these opportunities.



EDP SYSTEMS
52-53 Margaret St. London W1N 7FF

01-637
5796

Analyst/Programmer London + Overseas Travel £10-£12.5K

Personal attributes and a minimum of 18 months' real-time experience are of prime importance to join a team involved in the development and support of software products for the UK and European insurance markets. Potential exists to move into a specialist technical role. Ref: 0809/A

Assembler Programmer Herts c.£8.5K

An innovative British company developing POS systems has a fascinating opportunity for a programmer with two to three years' assembler programming experience. Work will be on applications ranging from POS, Stock Control, Accounts and Payroll to Operating Systems. Good colleagues and excellent working conditions. Ref: 0809/B

IBM Programmer City Up to £12K

A large banking organisation that provides excellent staff benefits including interactive development facilities (one terminal for each programmer) and training plans to introduce major new systems. Experience of COBOL, CICS and DL1 after a good educational background is the key to your participation. Ref: 0809/C

Electronics and Software Engineers Herts, Beds, Surrey £10-£13K

Opportunities exist with several of our clients to work on both defence and civil real-time systems where the need is for hardware and/or software skills with microprocessors and device drivers. Excellent promotion prospects with expanding companies who are able to offer relocation if needed. Ref: 0809/D

Programmers/Team Leaders South Coast £8-£16K

Our Systems House client is expanding fast and excellent career prospects are available to programmers with two to seven years' experience of defence and allied work. CORAL, PASCAL or FORTRAN skills are needed. New offices are being established in Southampton and staff will work there and on nearby client sites. Ref: 0809/E

Viewdata Systems Micro Programmers Herts + Overseas possibilities £9K+

Our client is developing viewdata systems and communications links for these and other applications using X25 protocols. Knowledge of X25 and M68000 assembler advantageous but other relevant experience will be considered. Graduates with two years' programming experience preferred. Ref: 0809/F

Software Development Surrey £10,000-£12,000

This is a specialised role involving the design, development and implementation of software for diagnostic and test purposes. Candidates must be familiar with DEC PDP 11/RISX 11 and ideally have had experience of working at hardware interface level. Knowledge of PASCAL or FORTRAN would be an added advantage. Ref: 0809/G

Programmers (Comms. Software) Middx £10,000-£14,000

This systems house specialises in transaction processing technology and has designed and installed a number of sophisticated switched networks, mainly in the financial sector. Vacancies now exist for high-calibre programmers with sound COBOL, ASSEMBLER or PASCAL experience and full training will be provided on TANDEM COBOL/TAL. Ref: 0809/H

Real-Time Expertise Surrey Border £9,000-£17,000

High technology systems house needs designers and consultants to be involved in the development and installation of defence, information and industrial real-time applications. Familiarity with Assembler or Real-Time/mathematical languages is desirable. Substantial remuneration package and relocation offered. Ref: 0809/I

Analyst/Programmers London Up to £10,000

A minimum of 12 months' on-line programming experience is required for two bright and enthusiastic programmers to join a small dynamic team involved in the development and support of leasing systems for the UK and European markets. First-class remuneration package and career prospects. Ref: 0809/K

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London £10,500-£13,000

A very prestigious and profitable organisation is currently replacing its communications network. As a result opportunities of rare scope exist for programmers with at least 12 months' experience of PL/M or PASCAL/RTL 2 to join small highly skilled teams developing new communications facilities and databases. Ref: 0809/L

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A leading UK consultancy requires additional high quality, professional staff at varying levels. Candidates must be graduates and have experience in one of the following areas: Digital Electronics, Simulator Design, Navigational Systems, Avionics or Acoustics. Excellent career prospects in a growing organisation. Ref: 0809/M

Mathematicians North London £13K

Mathematicians are needed with experience of target acquisition, trajectory modelling and simulation to join teams working on the early stages of a major new weapon system project. Good degree essential. Relocation assistance will be provided if needed for candidates to join this company which offers outstanding career prospects. Ref: 0809/N

Analyst Programmers London/Overseas Up to £12.5K

Rapidly expanding systems house with worldwide client base needs Hewlett Packard experts. Specification and implementation can be overseas but development in London on the in-house machine. Five years' experience, the last two on HP 3000, using IMAGE, QUICK, QUIZ etc is needed for these positions. Ref: 0809/P

153511



Isobel Bruce or David Fletcher 01-405 1006 or write quoting advertisement reference number, 16 Red Lion Square London WC1R 4QS

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IBM ASSEMBLER PROGRAMMERS

REAL-TIME CARGO PROJECT c£12,000-£13,000

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They have recently opened a new computer centre in West London offering both a challenging and technically stimulating environment with

★ TWIN IBM 4341s ★ DOS/VSE ★ CICS ★ DL1 ★ VM/CMS ★

They are currently seeking to recruit IBM ASSEMBLER Programmers for a large Real-Time Cargo Project. Candidates should possess a minimum of three years' IBM ASSEMBLER experience and preference will be given to applicants with experience of CICS, ACP, ALCS, VOLLIE or ROSCOE.

To find out more information about these exciting opportunities contact DP Selection Services quoting reference W9081.

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Specifically we would like to meet:

IMS DB/DC FINANCIAL EXCHANGE EXP. HP 3000 RAMIS CICS (COMMAND AND MACRO LEVEL) MVS ICL 2900, COBOL ICL 2900, INVENTORY CONTROL EXP. COBOL, S/34, MSA EXP. BASIC + OR BASIC +2 FORTRAN, MACRO 11	PROGRAMMER/ANALYSTS ANALYSTS PROGRAMMER/ANALYSTS PROGRAMMERS PROGRAMMER SYSTEMS PROGRAMMERS PROGRAMMERS ANALYSTS PROGRAMMER/ANALYSTS PROGRAMMERS PROGRAMMER/ANALYSTS	SURREY, ESSEX, BEDS. DORSET LONDON, ESSEX MIDDLESEX SUSSEX DERBY LONDON LONDON SURREY ESSEX ESSEX
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Contract or permanent, we can offer you the range of positions and applications to broaden your technical expertise and enhance your career advancement into project management and beyond. We can also offer you excellent salaries plus the full range of benefits associated with a successful software house, including the opportunity to work on challenging projects throughout the UK, Europe, Middle East and possibly the USA.

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tangent

Project Leaders

to £12,500

- + Mortgage
- + Benefits
- + Relocation

North West

Background

Our client is a blue chip company operating in the financial area which has expanded this Data Processing function by over 30% in the last two years, and will maintain this growth in the foreseeable future.

The Positions

Major on-line financially orientated projects have been agreed. Development work on these will commence shortly and there is a requirement for young professionals already with major systems experience who are seeking an innovative environment where ability can quickly be rewarded in terms of earnings and responsibility.

Candidates

Ideally will be graduates with upwards of four years' relevant systems and programming experience gained in a professional installation or software house, embracing exposure to controlling project teams. Equipment background is less relevant than sound personal qualities.

The Company Offers

Excellent career prospects, including formal training programmes, regular performance appraisals and promotion on merit within a growing department. As well as a subsidised mortgage facility, other benefits include full relocation as appropriate, excellent pension scheme, profit sharing and up to 26 days holiday. Flexitime is also operated.



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address across enclosing details.

RECRUITMENT OPPORTUNITIES

DEC SYSTEMS ANALYST LONDON

Up to £15,000

Our clients, a well-respected service bureau, have a requirement for a systems analyst to join one of their project teams. Ideally, applicants should possess a minimum of three years' experience in analysis and design of commodity accounting systems plus a programming background using Basic, although Stockmarket or other Financial applications experience will be considered. The successful candidate will work closely with other members of the team and will report directly to the Project Leader.

SYSTEMS PROGRAMMER SURREY

Up to £14,000

This well-known company have an urgent requirement for an I.B.M. Systems Programmer who has extensive experience of the generation and maintenance of M.V.S. operating systems on either 30XX or 43XX series hardware. The benefits associated with this position include flexitime working arrangements, staff shop and L.V.S.

SENIOR ANALYST/PROGRAMMER LONDON

Up to £11,000

An experienced Analyst/Programmer is sought by this company to work on the development of a new ledger software package. Applicants must have a minimum of four years' programming in Fortran and have previously worked on a variety of ledger applications. This is a newly created position and would ideally suit someone in their late 20s-early 30s. Benefits include a 32.5-hour working week.

PROGRAMMER LONDON

Up to £9,000

A major British company have a requirement for a young programmer to join their development team based in London. This represents an ideal opportunity for candidates of 'A' level or degree standard, and two years' programming experience in BASIC+2 using RMS on DEC equipment, who wish to develop their potential in a demanding environment.

CONTRACTS:

MUMPS Designer, Project Leader

LONDON

DMS II Programmers

LONDON

TSO/SPF CICS Analyst Programmer

LONDON

RPG III Sys 38 Programmers

LONDON

VAX BASIC +2 Programmers

LONDON

IDMS Designer, Project Leader

WILTSHIRE

COBOL DL1 DB/DC Programmers

WARWICKS

COBOL, TOTAL, VSAM Analyst/Programmers

LONDON

DOS/VSE COBOL, SHADOW Analyst/Programmer

OXFORD

RPG II Sys 34 SDA, MCV, Programmer

SURREY

U1100 COBOL FMS, Datatrieve Analyst/Programmer

LONDON

WICAT RM COBOL Analyst/Programmers

CITY

PL1, DOS, ASSEMBLER Systems Support

KENT

PL1, SHADOW Analyst/Programmer

LONDON

PL1, CICS, IDMS CMS, TSO, Programmer

KENT

BURROUGHS EPS, FC5 Modelling Programmers

LONDON

datascene

Datascene International Limited
Scapire House 169-173 Regent Street London W1R 7PB
Telephone: 01-439 7871
Telex: 25851

Operations Manager (HP 3000/68)

Rural Kent

to £11,000 + Relocation

Our Client is part of a large, multi-national Group of Companies, currently engaged in the implementation of a network of interactive minicomputers throughout the UK. During the coming months, Hewlett Packard 3000 minis will be installed at each of the Company's regional offices, each machine being central to the region's processing needs.

One such regional office is located in an impressive former country residence standing in picturesque grounds in a rural area of Kent, close to Sevenoaks. A 3 megabyte HP 3000/68 is soon to be installed and, in order to assist the Data Processing Manager in the preparation for the arrival of this new machine and its incorporation into our Client's nationwide network, a requirement has arisen for an experienced Operations Manager, who will play an integral part in the establishment of this new installation and its associated communications facilities. The Operations Manager will be instrumental in the establishment of a local network and plans exist to double the number of terminals in use in the medium term.

Candidates with sound experience of HP 3000 operations management should contact **Ian Payne** at the SCR Birmingham office on 021 238 3781 (24 hour answering service) as soon as possible as our Client wishes to interview shortlisted applicants during mid-September.

Initial interviews will be carried out at SCR regional offices at the Client's expense.

The ideal applicant will be fully experienced in HP 3000 Operations Management, having a good knowledge of both hardware and communications and the ability to manage a small team of staff. Once the physical installation of the machine has been completed, the Operations Manager will assist the DPM in the day to day activities of the Region's Computer Department, in addition to playing an active part in planning future activities and liaising with Operations Managers in other regional offices throughout the UK and the Group Head Office, which is situated in the West of England.

This position provides a very interesting challenge for a mature person in addition to a very pleasant, rural working environment. Furthermore, good promotional prospects exist within the Organisation, giving the successful applicant excellent long term career opportunities within a well-resourced, well-managed Group of Companies.

Technical, Sales & Management Appointments

Specialist Computer Recruitment Ltd

SOUTH
James House, 48 James Street,
London W1M 5HS
01-935 0871/488 0481

MIDLANDS & INTERNATIONAL
35-37 Great Charles Street,
Queensway, Birmingham B3 3JY
021-238 3781

NORTH
International House, 84 Deansgate,
Manchester M3 2ER
081-633 0427

BELGIUM
Avenue Louise 327,
Boite 4, 1050 Bruxelles
010 322-648 7151/71

HOLLAND
Willemshaven 92,
1071 H.M. Amsterdam
010 3120-760047

DALROTH

Our client has a very large and sophisticated IBM multi CPU Data Centre and Information Centre running several interlinked 3030's and 3080's at the heart of a complex network. It also has a number of attached mini's and micro's for stand alone and remote multiplexed sub systems.

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£15,000-£25,000
TAX FREE SALARIES

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TP SUPPORT AND SUPERVISION

New emphasis on TP applications has made additional demands for designing, supervisory, operations and troubleshooting staff to run the TP facilities.

Candidates must have worked as Data Communications Operators, Analysts or Supervisors within a teleprocessing or networking environment. Essential is experience of:

MVS JES 2 or 3 TSO VTAM

Some exposure to graphics peripherals would be an advantage.

ANALYST AND PROGRAMMERS

Geophysical and Scientific

With 4+ years' experience in an IBM environment using:

PL1, SPF, TSO

for Project Development, Maintenance and Documentation.

A knowledge of OS/JCL, Structured Programming techniques and IBM utilities such as PANVALET would be an advantage.

TRAINING OFFICERS

To qualify for these positions you must have a minimum of five years' experience in a large IBM environment working on development projects, ideally having used:

VM, CMS, TSO, SPF, MVS, JES 2 with either PL1 or FORTRAN

A broad based training background is highly desirable as the position offers scope to develop training at all levels.

For further information please telephone
Collin Maslen on 01-493 2947 day, or
evenings and weekends 0480 214493
quoting Ref. 5005.

DALROTH & PARTNERS LTD., 4 HALF MOON STREET, LONDON W1

URGENT REQUIREMENTS

ICL 2900 VME IDMS TPMS ANALYST/PROGRAMMERS
ICL IDMS (or IBM) DATABASE DESIGNERS
ICL IDMS (or IBM) DATABASE ADMINISTRATOR
ICL TPMS EXPERT ANALYST PROGRAMMERS
ICL 2900 GEORGE 3 WITH VAX COBOL SENIOR PROGRAMMERS

Please contact TONY COTTON ON (0442) 40761

COMPUTER SEARCH & SELECTION

Hamilton House, Marlowes, Hemel Hempstead, Herts. HP1 1BB

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urgent requirements

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(2 years)

£7-10K + benefits

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★ IMS, VMEB/structured software

★ Training/career path

★ Technical Support/Development

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Our clients are offering demanding and varied opportunities for experienced HARDWARE & SOFTWARE ENGINEERS within the following disciplines:

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ab

CONTRACT ?

CONTRACT - IBM MANTIS

Designers & Programmers

Sept/Oct./Nov.

3-6 months contracts

TOP RATES + BONUS

HEXAGON

Contract Assignments UK and Europe via IA

Senior Analyst/Programmers Holland
To join our existing team in The Netherlands, developing a dynamic and on-line database and communications system for an international and shipping concern. A sound knowledge of IBM System 38 is required together with RPG III.
Due to the continued expansion of the data processing facilities to incorporate the total world-wide operation this will enable successful candidates to become involved with a major communications network from its inception. Ref: 045

Hardware/Software Author Holland
Experienced author required to write and update documentation clearly describing a real-time operating system and its architecture. Internal architecture is based on 68000 or ICL II on the distributed system. Development will be on a VAX II-86 and a special purpose micro. Experience with UNIX, C and/or VAX VME is desirable but not essential. Ref: 046

Technical Author (Software) France
Author to generate end user documentation for client computer packages. Information generated from client computer packages and related with software engineers. Ability to communicate in French is essential. Ref: 047

Programmers ICL 2900
Our customer requires experienced ICL 2900 programmers for project tasks commencing in October. Knowledge of IDMS is essential and familiarity is also desirable. Programming Language is COBOL. Northern Home Counties/Duration 6 months. Ref: 048

Programmers ICL 2900
ICL 2900 COBOL programmers required for finance project. Ideal applicants should have sound knowledge of VME environment and experience of code checking and optimisation. Northern Home Counties/Duration 6-8 months. Ref: 049

Analyst Programmers Process Control
For this project applicants must possess good practical experience of industrial process control programming using a high level of the DEC PDP/11 type. Both low and high level languages skills are desirable. Assembler and Fortran are ideal. Northern Home Counties/Duration 6 months. Ref: 049

Programmers IBM
Starting in October this project requires IBM COBOL programmers who must have a knowledge of DB/1 and IMS/DB/1. Midlands/Duration 4-6 months. Ref: 049

Take this opportunity to discuss those and other requirements by phoning Hichin (0462) 57141 or write to:
Marketing & Recruitment Division
Industrial Artists Limited
21 Bencroft, Hichin
Hertfordshire SG3 1JP
IA is a registered Employment Business licensed by D 012

Industrial Artists Limited

BOX NUMBERS

Box number replies should be addressed to:

Box Number

c/o Computer Weekly
Quadrant House, The Quadrant
Sutton, Surrey SM2 5AS

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An integrated on line reservations system is in operation with terminals throughout the U.K. and in Amsterdam, Brussels, Dusseldorf and Paris. This system also hosts an interactive agency viewdata system utilising PRESTEL GATEWAY.

Operations are based on twin ICL 2966's. The service is provided 24 hours a day, 363 days a year. The viewdata system is front ended by a MODCOMP CLASSIC configuration. Additionally support is provided to several micro installations throughout the U.K.

BUSINESS ANALYST - Up to 14k

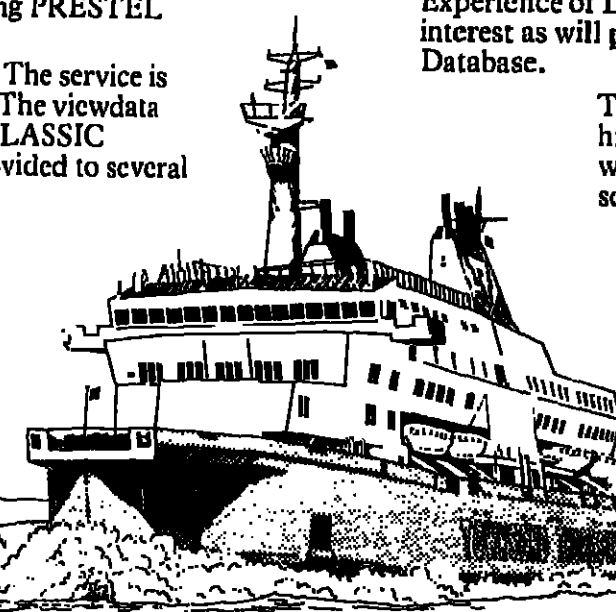
Several years' experience in this field is required and formal training in O & M is particularly relevant. The work is varied and interesting, involving projects throughout the group. Applicants with experience of or a desire to be involved in Office Automation Systems will find this position particularly rewarding.

PROGRAMMERS - Up to 12k

18 months' plus relevant experience for vacancies at all levels. Experience of DME/VME transition will be of particular interest as will practical experience of on-line systems and Database.

These positions offer excellent opportunities, highly competitive salaries and a benefits package which includes concessionary travel and a pension scheme.

Please apply with full c.v. to:
Derek Weaver, Senior Personnel Officer
Townsend Thoresen, 1 Camden Crescent
Dover, Kent CT16 1LD
Telephone: 0304 204040



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Our client, Langton Information Systems is an established UK company specialising in all aspects of information communication, retrieval and publication. A dynamic and successful company, backed by the AGB group, they are widely regarded as the European leaders in electronic publishing. Their continued commitment to product and skills development ensures that both projects and staff retain their lead in the forefront of new technology.

They are small, informal, enthusiastic and dedicated—achieving the kind of success that more formal companies envy. They are also expanding rapidly, and now need talented individuals whose philosophy matches their own. Excellent salaries, coupled with an impressive benefits package, make this an outstanding opportunity.

Current projects include:

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- Image Processing
- Communications
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- Micrographics
- Photocomposition

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Edith Watson, Computer Search and Selection, Hamilton House, Marlowes, Hemel Hempstead, Herts HP1 1BB. Tel: Hemel Hempstead (0442) 40761.

Product Training Manager £13,000-£15,000

To train in-house staff and customers in the use of existing software products and to design and present new courses for software currently under development. Applicants must have previous experience of product training, preferably in software applications, and should be capable of fitting in to a small, informal environment. A knowledge of publishing, together with proficiency in French or German would be a particular advantage. Training in technical presentation will be given where appropriate, and candidates should be prepared to travel overseas when required.

Customer Support Analyst £10,000-£12,000

To provide pre and post sales support on software products, for which full product training will be given. This challenging position will involve manning a hot-line, visiting customer sites presenting demonstration and pilot systems, and general trouble-shooting. Applicants should have a previous background in customer support, a good telephone manner, and administrative skills. Knowledge of IBM VM would be a distinct advantage.

Technical Support Analyst/Software Engineer to £14,000

To work with the Product Support Manager dealing with the support and installation of software products, liaising with customers, systems programmers and suppliers where appropriate. Some overseas travel will be involved. Applicants should preferably have a background in technical support, or a minimum of 3 years' software development experience. Knowledge of IBM VM is essential, some knowledge of DEC VAX hardware would be useful. The opportunity also exists to progress into systems programming.

Computer Search & Selection

LANGTON

Contracts



IBM

IBM 3081 DOS VSE Assembler programmer - Hants
IBM IMS DB/DC Systems analysts - Beds
IBM 38 RPG III programmers - Ldn/Swansea
IBM VM TP Systems programmer - Ldn/Surrey
IBM 3100 DPPX COBOL Analyst programmers - Ldn
IBM MVS ADA DL1 COBOL Analyst programmer - Surrey
IBM 370 MVS TSD/SPF Analyst programmer - Herts
IBM PL1 DL1 Senior systems analyst with programming background - Ldn
IBM System 3 systems analyst - October - Middlesex
IBM OS CICS COBOL Programmers - South Coast
RAMIS Contractors - Middlesex
SAS Programmers - Middlesex

BURROUGHS

BURROUGHS 68/6900 DMS GEMCOS COBOL programmers - Herts

TANDEM

Tandem designers, programmers, analysts - Ldn

DEC

Stock control/inventory systems analyst - Herts
VAX 11/750 VMS Datatrive Cobol analyst programmers - Ldn
VAX VMS Cobol programmers - Herts and Surrey
VAX VMS Systel programmers - Surrey
VAX 11/780 VMS Fortran programmers - Surrey

ICL

ICL 2900 VME/IDMS Cobol programmers
ICL IDMS Senior database designers
ICL IDMS Audit and quality assurance consultant
ICL ME29 THE IDMS Cobol analyst programmers
ICL DRS Pascal programmers
ICL TME IDMS Systems designers
ICL VME/TPMS Senior analyst programmers
ICL IDMS TPMS Analyst programmers and designers
ICL 2900 DPM - Ldn
ICL DME/GEORGE III TP Systems analysts
ICL VME Cobol analyst programmers

OVERSEAS

IBM 4341 DOS/VSE CICS DL1 Analyst programmer 18K tax free 12-month contract plus usual benefits - Kuwait
DOS to MVS conversion experienced programmers - Paris
SEL 32 MPX and HP 1000 Fortran assembler application and system programmers to join our team in Brussels

SOFTWARE ENGINEERS

Real Time programming using assembly language with Intel micro processors "C" or Pascal an advantage - Herts
Coral 66 military applications - various Home Counties
PDP/VAX RSX-11M/VMS Coral 66 - South Coast

HEWLETT-PACKARD

HP3000 quiz quick programmer - West Scotland
HP3000 Rapid Cobol programmers - Ldn and East Anglia

OTHER

Univac 1100 DMS TIP Cobol JSP programmers - Hants
Computer automation Opus 1 trans basic programmers - Scotland
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Lecturers required to prepare hardware independent course manuals for programming students

Tel: Hatfield (07072) 65555

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your appointments register

Programmers

NCR/IBM/COBOL to £15K
Insurance Banking London H. Counties - N. Eng

COBOL/PL1/OS/CICS/IMS to £13K
Commercial H. Counties - Midlands - Manchester

DEC/PDP 1170 to £11K
COBOL Surrey

HONEYWELL to £12K
Systems Programming experience Midlands/London

IBM/MVS to £15K
IMS/CICS/DL1 Midx

SYSTEMS 34/38/RPG2 to £12K
Insurance/Commercial London/Home Counties

IBM to £16K
System exp. Essex

BASIC to £15K
Mini/Micro Computer IBM Assembler London

IBM/UNIVAC/COBOL to £12K
On-line/Database Surrey

VAX & IBM SYSTEMS to £11K
Fortran MVS/TSO South Yorks.

Analyst/Progs

PRIME CAD/CAM to £11K
Home Counties/E. Anglia

IBM 34/38/4341 to £15K
London/Home Counties/Norfolk

ICL 1500/ME29/2903 to £12.5K
COBOL Essex/Herts

IMAGE PROCESSING C/UNIX to £12K
Scientific Applications

Hardware/Support

APPLICATIONS ENGINEER to £15K
Peripherals Support/Microprocessor Systems London plus International Travel

CUSTOMER SUPPORT £10K
Basic Hampshire

SUPPORT ENGINEER to £17K
VAX 780/750 UK & Europe

EXPD. SOFTWARE TECH. AUTHORS £ NEG.
Datacomm/Operating Systems/Telephony/etc. Europe

PROJECT ENGINEER to £11K
Systems/DEC Beds/Manchester

SOFTWARE SUPPORT £ NEG.
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ICL SYSTEM 10/25 to £17K
South East

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Real time - Modelling Mun/Essex/South West

IBM/BURROUGHS to £15K
Commercial Accountancy London/Surrey/Manchester

IBM/PL1/DL1 to £11K
Database Support Midx

ICL/ME29 to £16K
Commercial Design Herts

IBM SYSTEM 34/38 MAAPICS to £15K
Surrey

Software Engineers

CORAL/PASCAL/MASCOT/C to £13K
Communications Glos/Hants/Sussex/Midlands/Manchester

ASSEMBLER/PLM to £12K
Northern England

MILITARY SYSTEMS/RADAR to £14K
Coral Mascot Hants/Surrey/Essex/S. Yorks

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Telecomms. ATF Derby/Surrey/London/Hants

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Snr Appointments

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Computer Modelling/Fluid Flow S. London

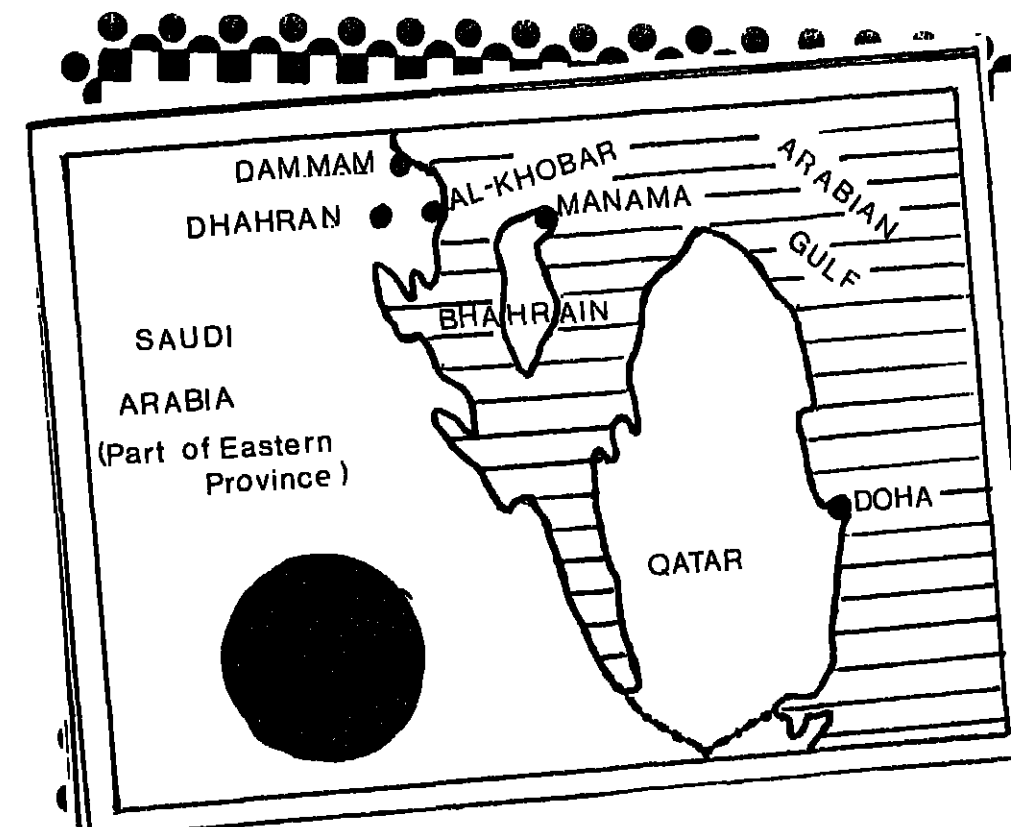
ICL/PRE- AND POST-SALES SUPPORT to £16K
Beds

SOFTWARE SECTION MANAGER to £16K
Pascal/C/Microprocessor Essex/Middlesex

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Sloangate
The Appointments Register

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SYSTEMS ANALYSTS

Requirement 5/A - SAUDI ARABIA

TRAINING SPECIALIST - £28,000
Specializing in training PL/1 and Fortran, TSO/SPF, CMS in an IBM environment operating under MVS JES2 and or VM. Ability to communicate effectively with young Saudi Arabs is essential as is experience in the oil industry.

SYSTEMS ANALYST - £28,000
Degree plus five years' D.P. experience (or 8 years D.P. minimum experience) in large scale IBM environment. Specific skills in MVS, VM, SAS, TSO, SPF required PL/1 or Fortran preferred. Some training background as an instructor desirable as would experience working as a member of a project team in D.P. systems.

Requirement 5/B - QATAR
SENIOR ANALYST - £31,500
To undertake varied assignments from feasibility and requirement analysis to system design and implementation in a large commercial IBM 4300 environment. Candidate must have minimum nine years' experience and be able to deal with top management and D.P. personnel.

TECHNICAL ANALYSTS & PROGRAMMERS

Requirement 5/C - QATAR
TECHNICAL WRITER/STANDARDS & PROCEDURES SPECIALIST

(£28,000-£33,500)
To review and where necessary modify or design from scratch standards and procedures in a large IBM 4300 D.P. Department, especially in the documentation area. Candidates must have several years technical writing experience, including at least four years' in a large D.P. environment, and must be skilled in documentation and administration aspects of D.P.

Requirement 5/D - SAUDI ARABIA
SCIENTIFIC ANALYST/ANALYST PROGRAMMERS
(£28,000-£33,500)
BS. Engineering (four years' minimum experience) or seven years' related job experience, two years' as an analyst, PL/1 experience required, ISPP preferred, JCL (OS), TSO, Project Development Methodology, Pervet Program Management, IBM utilities, Flow Charting, Data Flow Diagrams, ISPP Dialogue Manager, Structured Programming techniques, Documentation Writing experience. Ability to work with user to define maintenance and development projects and progress the projects to completion with minimum supervision.

Requirement 5/E - QATAR
SYSTEMS PROGRAMMER
(£28,000-£33,500)
With not less than four years' Systems Programming experience in a large IBM environment. Will be responsible for the systems programming function of three IBM 4300 systems. Must be experienced in: DOS/VSE, VM/CMS, CICS/VS, POWERVIS, ICC, VSAM, SORT/MERG 2, VTAM, (DL1), COBOL, FORTRAN & PL/1 would be useful.

COMMERCIAL PROGRAMMERS

Requirement 5/F - SAUDI ARABIA

Several PROGRAMMERS & ANALYST/PROGRAMMERS
(£19,000 to £26,000)

Minimum three years' experience of IBM OS, TSO (or similar) IMS-DB, PL/1.

OPERATIONS JOBS - SHIFT WORKING

Requirement 5/G - SAUDI ARABIA

SUPERVISORS OF T.P. SERVICES/T.P. EQUIPMENT OPERATORS
3 POSITIONS AS FOLLOWS
(£17,500 to £19,000)

3-5 years experience in a large system, MVS/JES2 or JES3/TSO, VTAM, 370/158mp as console operators.

18 POSITIONS AS FOLLOWS
(£17,500 to £19,000)

Five years experience in large systems, MVS/JES2 or JES3/TSO, VTAM, 370/158mp. Graphics experience is required, specifically in the output area in Calcomp, Benson plotters and 3800 printers.

If you are interested in any of the above positions, and would like to apply for more information, RING TODAY for an application form and information sheet, asking for ROSALBA (ROZ) DE LISI on: 01-222 6722 or write to her at Livingstone House, 11 Carteret Street, London SW1H 9DJ.

COMPUTASTAFF
Livingstone House, 11 Carteret Street, London SW1H 9DJ. 01-222 6722 (20 lines) Telex: 894384

01-222 6722

MVS SYSTEMS PROGRAMMERS to £15,500 + Car + Bonus

A Technical System Consultancy are currently expanding its MVS technical support group and require additional systems programmers with three years+ experience. The company's philosophy is that of continuing training and growth to allow their systems programmer to be abreast of current software and new developments. If you are a systems programmer with all round expertise or a specialist in any areas such as On-line, Database, Real-time, SNA, etc, then this could be the ideal opportunity for you.

OS/VS1 SYSTEMS PROGRAMMER to £15,000 + perks

This major financial institution is currently converting to MVS. They require a VS1 Systems Programmer to maintain their existing operating system until the conversion is completed. This is an excellent opportunity for a systems programmer with 2 years experience to become involved with state-of-the-art technology, in a forward thinking organisation and help you develop new skills, especially in the communications area. For more information please call the number below or alternatively send in your up to date c.v.

JUNIOR SYSTEMS PROGRAMMER DOS/VSE to £12,000

This multi-national company are currently seeking to enhance its technical support team. They are currently running a 4341 under DOS/VSE with CICS/DLI and will be converting to MVS in the near future. To qualify for this position you should have a minimum of 12 months systems programming experience. A knowledge of ASSEMBLER coupled with familiarity of SIPO is a distinct advantage. Full training in CICS and Database will be given as well as in-depth training in MVS. For this rare opportunity please call or send in your c.v. for an early interview.

SENIOR SYSTEMS ANALYST to £17,000

A major manufacturing company is currently expanding its Data Processing Facility and requires an additional Senior Systems Analyst. This position will attract an Analyst with a minimum of 5 years experience preferable in an IBM environment. To qualify for this position you must have managed a major system from feasibility through to implementation. The ideal candidate will have also worked within a manufacturing environment. For more details please call or alternatively send in your c.v. to the address below.



Please contact our permanent recruitment division regarding this and many more vacancies

SYSTEMS DESIGNER to £12,500 + perks

To qualify for this position you must have at least 4 years D.P. experience including 12 months in the role of a Systems Designer. The hardware is IBM and the applications are mainly financial. A salary of £12,500 is envisaged by our clients plus the added advantage of a mortgage subsidy.

IBM COBOL PROGRAMMERS to £11,000

We currently have several vacancies for IBM COBOL Programmers with a minimum of 18 months programming experience. Any exposure to On-line or Database techniques would be an advantage but full training will be given where necessary.

VAX/VMS COBOL to £12,000 + perks

We currently have various opportunities for computer professionals with exposure to VAX COBOL.

It is envisaged that you will have a minimum of 2 years D.P. experience of which some must have been on VAX using COBOL.

The positions we have available are with a wide variety of companies who range from financial institutions to Software Houses.

Please call or send your current c.v. to the address below.

BASIC + / + 2. ANALYST PROGRAMMER to £12,000 + Car lease scheme

This DEC OEM is currently expanding its package development teams. To enable them to keep up with the demand for their services. The successful candidates will have a minimum of 12 months programming experience using BASIC + / + 2 coupled with some exposure to analysis.

An excellent salary coupled with good career progression in a stimulating and dynamic environment is awaiting you.

IDMSX DATABASE ANALYST to £14,000

This large ICL 2900 site is increasing its use of the database and to enable the planned expansion to go ahead they require a Database Analyst.

The importance of this position reflects in the salary offered. The company feel that this position is vital to their computer strategy for the foreseeable future.

To qualify for this outstanding opportunity an in-depth knowledge of IDMS is essential. This could be an ideal move for a Senior Analyst/Programmer to move into full time Analysis.

ICL COBOL PROGRAMMERS to £9,500

This 2900 site is currently seeking COBOL Programmers with a minimum of 18 months experience.

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The company have a policy of promotion from within, so career progression is excellent.

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H.P. 3000 PROGRAMMERS & ANALYST/PROGRAMMER S.E. ENGLAND

If you have 2-3 years' H.P. 3000 COBOL experience with IMAGE, QUERY, VIEW & QUIT, we have several vacancies in and around London that you would be applicable for. Salaries up to £10,000 for PROGRAMMERS, up to £12,000 for ANALYST/PROGRAMMERS. REF SR/CW.

PRIME PROGRAMMERS and ANALYST PROGRAMMERS LONDON

Our clients, a major Software House based in London require PROGRAMMERS and ANALYST PROGRAMMERS with 2-4 yrs. experience in developing commercial accounts systems in COBOL or FORTRAN on IBM ME equipment. Preference given to applicants who are highly motivated with strong personalities. Salaries dependent upon experience - up to £13,000. REF SR/CW.

ANALYST/PROGRAMMER SUSEX Up to £10,500

Our client, a prominent figure in the telecommunications industry have an urgent requirement for an ANALYST/PROGRAMMER. The successful applicant would have at least 2 yrs. + exp. H.P. 3000 COBOL experience with IMAGE, QUERY, VIEW & QUIT to work on accounts systems. Usual large company perks. REF SR/CW.

BURROUGHS PROFESSIONALS ALL AREAS

We are still being retained by many prestigious clients to recruit BURROUGHS PROGRAMMERS, ANALYST PROGRAMMERS and SYSTEMS ANALYSTS in all areas. If you have at least 3 yrs. experience, contact us now for more information. REF SR/CW.

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PROGS A/PROG COBOL DL1 CICS
PROGS BUSINESS BASIC EXP.
PROGS ANAL/PROGS IBM COBOL IMS
DESIGN/PROGS MICRO 'C'
PROGS VAX COBOL DATABASE
PROGS RM or GIS COBOL UNIX
ANAL/PROGS DATA GENERAL - B. BASIC

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IBM (JUNIOR) PROGRAMMERS

To £10,000
At least 18 months IBM programming experience and good communication skills will qualify you for a move into analysis or training in ONLINE and DATABASE techniques. Vacancies exist in all areas of London and the Home Counties. REF MB/CW.

RPG 11 PROGRAMMERS and ANALYST/PROGRAMMERS To £14,000

We currently require GOOD RPG2 experience for a variety of challenging positions. Opportunities include training on SYSTEM 38 or a move into international banking. REF MB/CW.

RPG 111 PROGRAMMERS and ANALYST/PROGRAMMERS To £18,000

One year's solid RPG 11 and a sound D.P. background preferably on GSD equipment, is sought by a number of clients. A number of vacancies exist in the SUSSEX area (full relocation expenses paid) and north of the river. REF MB/CW.

PL/1 and/or ASSEMBLER To £12,000

Large IBM user running MVS require PROGRAMMERS and ANALYST/PROGRAMMERS to work principally on development of new systems. 2 years' PL/1 and/or ASSEMBLER exp. required for this Midlands site and similar vacancies exist throughout the South-East. REF MB/CW.

SYSTEMS PROGRAMMERS To £16,000

SYSTEMS PROGRAMMERS with 2 years' DOS, MVS or VM Systems. Experienced candidates should have a good working knowledge of CICS together with a sound programming background using COBOL, ASSEMBLER or PL/1. REF RC/CW.

DATABASE SPECIALISTS £14,000-£19,000

Candidates must have a thorough knowledge of database techniques together with a sound background in DB1, IMS or ADABAS preferably gained in a Database Technical Support Group. Experience of setting up a database from feasibility through to implementation would be a distinct advantage. REF RC/CW.

CICS PROGRAMMERS To £13,000

3 years' experience of working on IBM mainframes under DOS/VSE, OS/VS1 or MVS Systems. A good COBOL programming background is essential as is at least 1 year of working on CICS Systems. REF RC/CW.

SYSTEMS ANALYSTS To £14,000

HAVE YOU GOT 2-3 YEARS' ANALYSIS EXPERIENCE? A number of clients seek ANALYSTS with experience of commercial or financial systems gained on large IBM sites. REF RC/CW.

HONEYWELL LEVEL 64 To £11,000

Vacancies in N. LONDON, W. LONDON, WEST COUNTRY, THAMES VALLEY for PROGRAMMERS with sound GCOS skills, particularly IDS and OS. Parks include: Bonus Scheme, Cars etc. PROGRAMMERS with GCOS/NETWORKING TECHNICAL skills particularly sought after. REF MN/CW.

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ALL LEVELS DATAPoint/DATABUS
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H. COUNTIES

ASAP
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OCT/NOV
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& Excellent
Do you have experience of the following - Instrumentation, Data Acquisition, Data Communication, Systems, Display, Database Design. My company, a large well-established Software House are seeking PROGRAMMERS to SENIOR CONSULTANTS. You will be working on a variety of projects and should have experience of either CORAL 66, PASCAL, RTL/2, ASSEMBLER, FORTRAN on hardware such as DEC PDP's, VAX, INTEL, H.P. Parks include BUPA, private pension, relocation package, excellent salaries and an opportunity to travel. For more information contact SHIVON.

SENIOR SOFTWARE ANALYSTS

HERTS To £13,000
Flexible attitude and knowledge of high level block structured languages are required for positions involving occasional International Travel. You will be developing ETHERNET based office products, working on state of the art LAN technology. PERKS are excellent and there are opportunities for career advancement. REF SF/CW.

ELECTRONICS & SOFTWARE/SYSTEMS ENGINEERS NORTH LONDON & Negotiable

You will be working on VAX and INTEL. Conditions include relocation assistance, 37 hour week, 6 weeks holidays, free pension and life assurance, sports and social facilities. My clients are prime contractors to the M.O.D. for electronic warfare and guided weapon systems. Due to a massive development program they are seeking personnel from an electronics/engineering background, junior or senior level, including - SOFTWARE ENGINEERS - 1 yr. + experience of software design preferably using CORAL 66, MICROWAVE ENGINEERS - 1 yr. + experience in a microwave design environment, SYSTEM ENGINEERS - 1 yr. + of mathematical modelling of digital systems. If you are looking for a challenge and opportunities to develop your career, then why not call SHIVON to discuss mutual requirements.

SYSTEMS & PROGRAMMING MANAGER NIGERIA £29,000 p.a.

Due to further expansion of overseas outlet, an opportunity has arisen for a SYSTEMS & PROGRAMMING MANAGER, educated to degree level, looking for a challenging and involved position to stretch already acquired technical and supervisory skills. You will be working on DEC PDP 11, RT11/CTS300, equipment, using DIBOL in an operational organisation, and be actively involved in systems analysis and programming with emphasis on user contact and the management and training of staff. Accommodation is provided for single or married status. REF JH/CW.

PROGRAMMERS TO PROJECT LEADER LEVEL BERKS & ESSEX £7,000-£13,000

BERKS: VAX experience preferred (PDP 11 BASIC background considered). VAX COBOL will remain to VAX-BASIC. You will be involved with teams developing commercial and financial systems. Project Leaders will be in charge of teams of up to eight staff and European travel is required. ESSEX: Two major organisations require DEC ppp 11 Programmers, Analyst Programmers and Project Leaders. One company has Project Teams of up to six people developing Insurance Systems on PDP 11 40's and 11/70's under RTX/VE using BASIC + / - 2. The second company will remain on DEC PDP language used in a commercial environment for their small PDP 11's. For positions entailing international travel and user contact at high level. Benefits include career prospects and relocation assistance. REF JH/CW.

ANALYST/PROGRAMMER CITY £11,000

From two years' BASIC on DEC is required by professional services company utilising PDP 11/70's and no computer initiative and a responsible attitude is necessary to develop a variety of commercial applications. REF JH/CW.

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TANDEM, Guardian, COBOL, Pathway

MICROS, Single Chip Processors

COBOL and FORTRAN or ASSEMBLER

Financial/Audit background

80800, COBOL

HP or DEC or Elliot Auto.

CORAL 66, 2+ years' experience

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Analyst/Programmers
Analyst/Programmers and Programmers
Analyst/Programmers
Programmers
Analyst/Programmers
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Analyst/Programmers
(Europe)

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Designers and Analysts
Programmers
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Programmers (Europe)

Programmers

Programmers

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To assist the Training Manager we also require a Senior Lecturer with lecturing or teaching experience in computing or a computer related field. Applicants should be graduates under 40 with relevant experience. The Training Manager position carries a company car. Send a CV to or ask for further details and an application form from:

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Artificial Intelligence

Thames Valley: Salaries to £14K

Our Client's Research Centre, established in 1978, has recently taken additional premises in the Reading area. An immediate requirement exists for personnel to participate in the development of the Company's range of products and services. You are probably engaged as a Systems Programmer, Designer or Consultant and have a minimum of B.Sc. degree in a numeric subject. Those who hold an M.Sc. or Ph.D. are encouraged to apply if they can combine an academic background with some relevant industrial or commercial exposure. The Company's specialist areas of activity demand that all potential employees have an in-depth knowledge of two or more of: artificial intelligence, cybernetics, knowledge engineering, robotics, process and control engineering. Ref: L36/A

'C' & UNIX Programmers

London: Salaries to £10K

A highly respected Product Supplier is currently seeking to recruit several Systems and Applications Programmers to work on its UNIX-based range of products. Applicants, aged 22-26 years, should have graduated since 1980 with a good class honours degree in a numeric subject and have at least one years commercial or industrial experience. Very recent M.Sc. or Ph.D. candidates are also encouraged to apply particularly if their chosen subject matter was directly concerned with UNIX systems software. It is advantageous to be fluent in 'C' programming language and also offer PASCAL as a secondary language. Ref: L36/B

Firmware Programmers

Home Counties: Salaries to £11K

A small but rapidly expanding company has a number of vacancies for Firmware Programmers/Designers to join its product development group. Acting as the external development department for many of the leading names in the industry, the company is able to offer a wide range of hardware and software involvement. Suitable applicants will be graduates with a B.Sc. or M.Sc. in Electronic Engineering or Computer Science. It is essential that you offer fluency in Micro Assembler with additional knowledge of a block structured language such as Pascal or 'C', being desirable. Mostly based in-house you will be involved in the development of intelligent terminals, data capture equipment, multi-micro communications processors or ATE software. Ref: L36/C

RSX/VMS Progs

London & H Counties: Salaries to £13K

The Communications Division of a leading Systems Supplier and Consultancy is currently seeking additional Systems Programmers. Suitable applicants should be graduates with a minimum of two years software or systems design experience within a PDP/RSX-11M or VAX/VMS environment. It is essential that you should offer fluency in Assembler and that you are fully familiar with the internals of RSX-11M or VMS. Additional knowledge of a high level language e.g. FORTRAN or PASCAL would be a distinct advantage, as would experience of working within a data communications or distributed processing environment. Applicants who demonstrate management potential or those who already have some project leading experience will be considered for more senior positions within the project teams. Ref: L36/D

Micro Development

Central London: Salaries to £15K

A leading Systems Supplier and Consultancy currently requires a number of Project Leaders, Applications and Systems Programmers. Suitable applicants should be educated to B.Sc. level and have a minimum of one year's subsequent industrial experience in a microprocessor based environment. Of particular interest, will be applicants who have some knowledge of Intel microprocessors using PL-M as a principal programming language and having PASCAL as a secondary language. For certain positions, it is mandatory to have an in-depth knowledge of Intel's RMX operating system and development tools. However, candidates who are familiar with other microprocessor systems will certainly be considered. Ref: L36/E

Systems Engineers

Herts/Bed: Salaries to £13K

The Hardware and Systems Group of a leading computer manufacturer has a number of vacancies for Senior Systems Engineers. A good degree in Electronics or Electrical Engineering, supplemented by 4/5 years industrial experience, are minimum requirements. Additionally, successful candidates will be required to have project management experience or potential and an ability to work under stress conditions. The main area of responsibility will be the design and implementation of terminal equipment interfacing to Local and Wide Area Communications Networks. Practical experience in this field will be especially welcome, as will knowledge of bit-slice processors. Ref: L36/F

Real-Time Programmers

Central London: Salaries to £11K

A leading Systems House and Consultancy is seeking to recruit additional Real-Time Programmers for its Central London Head-Office. Suitable candidates should be graduates with at least 12 months relevant experience in a microprocessor based real-time scientific environment. It is essential that you offer fluency in at least one of the following: PASCAL, 'C', FORTRAN, ADA, CORAL-66 or Assembler. Hardware experience is less important, but preference will be given to applicants who have recently worked on real-time systems. Applicants should be graduates on PDP-11/VAX, Intel 8080 or Motorola 6800/68000. Ref: L36/G

Signal Processing

S. Home Counties: Salaries to £14K

Our client, one of the leading UK Systems and Software Houses has a number of vacancies for Signal Processing Specialists to join either the Central London or Surrey based offices. Applicants should be graduates in a scientific discipline and have subsequently gained at least two years experience in an industrial or defence environment developing software for signal processing applications. Those who have current or very recent experience with Floating Point Systems array processors are particularly encouraged to apply. Ref: L36/H

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IBM OPPORTUNITIES ANALYST/PROGRAMMER LSESEX

Due to major expansion plans for 1984, my client, a highly respected British manufacturing company is seeking a number of analysts/programmers to join their sales and marketing development team. Two years + IBM COBOL is essential, preferably coupled with DOS/VSE and CICS, however due to the number of posts available, CICS training can be provided. No small large company benefits and superb prospects. Ref. EW2737

IBM ASSEMBLER CITY To £12,000

Two new positions with International City Bank housing a range of IBM mainframes, GSD and DEC machines. They require a senior programmer with 4 years + experience, and a programmer with 2 years + experience of IBM Assembler, DOS/VSE and hopefully UNIPAT or financial experience. You will play an important role in their support team, with every opportunity to increase your user liaison skills. Full banking package including subsidised mortgage. Ref. EW1572

SYSTEMS ANALYST MIDDLESEX To £13,000

International marketing/retail organisation housing IBM 4300 kit under DOS/VSE with CICS and DL/I, is seeking 2 analysts with an IBM background, and 4 years + D.P. experience. You will be working on the investigation and development of a range of sales, marketing and manufacturing systems, and should have very strong personal communication skills. Full range of benefits including relocation assistance where necessary. Ref. CW2722

ANALYST/PROGRAMMER To £10,500

Superb opportunity for ambitious young analyst/programmer to join this important export company. The ideal candidate will be well educated, with 2 years experience of IBM COBOL DOS/VSE, and possibly some knowledge of CICS, DL/I or RPG II, coupled with plenty of drive and enthusiasm. Benefits include non-contributory pension, free health insurance, 5 weeks' holiday and relocation assistance. Ref. CW2723

PROGRAMMER SURREY To £9,500

12 months + commercial IBM COBOL gained in a DOS/VSE environment, are the essential requirements for this interesting development position. You will be working in an IBM 4341, DOS/VSE, VM/CMS, CICS, UFO environment, so any knowledge of these skills would be advantageous. Current projects include payroll, ledger, financial modelling and you will be joining a young dynamic team and rewarded with flexible, paid overtime, free parking and staff discounts. Ref. CW2729

PROGRAMMER/ANALYST LONDON To £10,500 Neg

One of the world's largest petroleum groups, has a need for programmer/analysts who can use their initiative and drive, within a structured team environment. 2 years + IBM MVS COBOL is essential, and you will be working in a CICS and DL/I environment with VSAM and JES 2. Plenty of opportunity to move more towards an analysis role if desired. Call for more details. Ref. CW2727

INTERNATIONAL TRAVEL To £11,500

Outstanding opportunity for a programmer/analyst to utilise his or her technical and customer liaison skills within any client's I.L. and European offices. 2 years + IBM COBOL, with MVS and DL/I is essential, together with the ability to liaise with all levels of staff, and assist in the implementation of a financial system. Strong management prospects for the right candidate. This electronics group offer a bonus scheme, health and life insurance, and relocation where appropriate. Ref. CW2314

SYSTEMS PROGRAMMERS To £14,000

We have too many positions to advertise! If you can offer 18 months' + 5 years' systems programming experience in an IBM DOS/VSE, MVS or VM/CMS environment together with any of the following: CICS, VTAM, NCP, ACP, JCL, ASSEMBLER, JES 2, we have opportunities available in London, Essex, Herts, Berks, Surrey and Kent with excellent career prospects and benefits. Worth a call! Ref. CW2314

IBM PL/I NORTH WEST LONDON £10,000

A large engineering concern based in North West London require an IBM PL/I programmer analyst to join a small development team. The company house an IBM 4341 running under MVS and IS/VS and using IDMS. Applicants with on-line experience preferred although batch programmers will strongly be considered. The company offer an excellent career path for self motivated individuals. Benefits include LV's and S.T.L. Ref. GW2674

Brushfield House, 12 Brushfield Street
Bishopsgate, London E1 6AN
Telephone: 01-247 3356 (24 Hours)

RPG II/III

IBM SYSTEM 34 LONDON c.£12,000

A senior Analyst/Programmer is required by my clients, a major manufacturing concern. A large production control project will shortly be underway and the candidate chosen will heavily assist with the design and implementation of the system and will often deputise in the D.P. Manager's absence. The company offer excellent benefits including S.T.L. subsidised restaurant and non-contributory pension scheme. Ref. GW2739

FULL RETRAINING IBM SYSTEM 38II N. LONDON/HERTS To £10,000

A subsidiary of a large multi-national organisation are seeking to recruit an additional programmer/analyst with either an IBM System 34/RPG II background or an IBM System 38/RPG III programmer. Full IBM courses offered to retrain from 34 to 38. You will be developing and enhancing commercial systems and databases. Initially you will be mainly programming but you will move into a more analytical role in the very near future. If you feel you fit the bill then please do not hesitate to apply. Relocation assistance offered. Ref. GW2733

IBM SYSTEM 38 WEST COUNTRY c.£12,000

Highly professional information consultancy require an IBM System 38/RPG III analyst/programmer, who is able to offer technical advice to more junior members of staff and who is able to play a leading role. The ideal candidate should have a minimum of 2 years GSD experience with at least 12 months 38/RPG III experience together with a good technical ability. The opportunity to move into management is highly likely. Full relocation assistance is offered. Ref. GW2748

IBM SYSTEM 38 RETRAIN!!! MIDDLESEX £9-11,000

Due to continued company expansion, this well established and highly respected company are seeking to recruit 2 additional programmers/analysts. They have just upgraded from IBM System 34 to System 38. Although experienced RPG III programmers would be ideal, they are quite willing to retrain good IBM System 34/RPG II people. The company are on the final stages of conversion work and thereafter will be involved with major development projects. If you can offer 18 months' GSD experience then why not give me a call to discuss these opportunities. Ref. GW2713

OTHERS

DEC/PDP - MACRO II To £10,000 + Mort

My Client a major financial organisation based in London is currently seeking to recruit a Programmer/Analyst with MACRO II and RSK-11-M experience. You will become a member of a fast expanding department involved in the development of banking and accounting projects. Full training is provided, and there are prospects for advancement into analysis. Benefits include a mortgage subsidy, pension scheme, subsidised restaurant and S.T.L. Ref. AW1010

DEC/VAX - BASIC+ To £12,000

This dynamic London based bureau organisation would like to meet ambitious programmers with a minimum of 2 years' DEC, and BASIC + experience. You will be immediately involved in developing commercial and financial systems, both in-house and for major clients. Hopefully you will already have had some exposure to analysis although training will be provided. Ref. AW2531

HEWLETT PACKARD - SENIOR To £15,000

A project leader is sought by this manufacturing concern, based in Berks. The successful applicant will have a minimum of 5 years' systems and programming experience, including the following: Extensive knowledge of Hewlett Packard 3000; experience of Systems Design; Analysis; Programming and staff supervision duties. They offer you the chance to head a team of highly capable programmers in the development of on-line commercial systems to an extremely high standard. The environment is challenging and the career progression into project management is likely in the future. Ref. AW2267

HEWLETT PACKARD - ANY LANGUAGE To £9,000

Can you offer a minimum of 6 months' Hewlett Packard 3000 experience in any language? My client based in London is seeking an ambitious programmer to take part in the on-line development of new financial systems on both HP3000 and HP250's in COBOL and BASIC. Any training necessary will be given, although it is hoped that the successful applicant will be familiar with IMAGE, VIEW and QUERY. There will be extensive user contact, and progression to analyst/programmer status is anticipated in the near future. Ref. AW1717

HEWLETT PACKARD - COBOL £Neg

An exciting opportunity exists for a programmer with in excess of 1 years' HP3000, COBOL experience, to join this Berks based engineering organisation. IMAGE, and VIEW are essential as is the desire to progress into analysis. You will have extensive user contact, and be working in an on-line, development environment. An above average salary is offered and the package includes R.U.P.A., non-contributory Pension Scheme and subsidised restaurant. Ref. AW2135

MINI/MICRO EXP £9,000

This rapidly expanding Surrey based company require an ambitious Programmer/Analyst with minimum of 18 months' COBOL on any machine although mini or micro would be preferred. Lots of customer support work and liaison. My client makes a special package and candidates will be required to travel initially in England and might eventually involve some European travel. Excellent prospects for forward thinking person who is looking to climb the career ladder. Ref. MW2741

DATA GENERAL £10,000 +

If you have a minimum of 18 months' Business Basic programming experience and would like the opportunity to get involved in systems analysis, this London based systems house currently requires a good programmer. All development work is of a commercial nature. This position will offer the successful candidate an excellent salary and an interesting and rewarding environment within a large and diverse department offering the chance to gain experience on several different machines. Ref. MW2743

PRIME ANALYST/PROGRAMMER £9-11,000

This city based chartered accountants currently require an analyst/programmer with two years' COBOL to work on major redevelopment of existing applications. All on-line work and lots of user liaison. This exceptional opportunity to someone in their 20-30's as it will also involve responsibility and supervision for junior staff. If you think you fit the bill and you're looking for more than a straight analyst/programmer job please contact me at once as this company will be interviewing this week. Ref. MW2742

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WELSH JOINT EDUCATION COMMITTEE CYD-BWYLLGOR ADDYSG CYMRU

COMPUTER PROGRAMMER Salary Scale 4/6 £5,244 - £8,712

Applications are invited for the new post of COMPUTER PROGRAMMER in the Computer section of the Welsh Joint Education Committee. The Committee uses an ICE ME28 running an on-line examination system and the person appointed will assist the Computer Officer in both development and maintenance programming work. Applicants should be suitably qualified and should preferably have had 2 years experience of working in COBOL and of an ICE ME28.

Further details and application forms (to be returned by 21 September 1983) may be obtained from the Secretary, Welsh Joint Education Committee, 24 Western Avenue, Cardiff CF5 2YX.

J. L. Bruce
Secretary

By November 1st two Senior Systems Programmers will have dramatically changed their lifestyle

Sedgwick are the leading UK multinational broking group operating worldwide, handling insurance business originating from 108 countries. Following breakthroughs in the field of integrated text and data processing utilising a range of IBM 8100 hardware, a significant upgrade and expansion in hardware, software and information processing techniques is now taking place. The current line-up of twin IBM 3032's and 4341's will soon be augmented by the arrival of their first IBM 3083. Large on-line database developments are already underway.

Senior Systems Programmer Performance & Capacity Planning c£16,500

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Sedgwick

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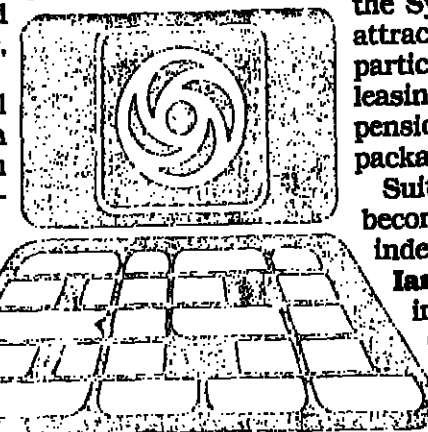
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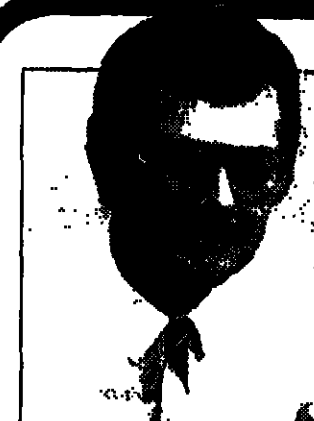
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Freelancers in the north of England who are available now or in the near future are invited to contact me, Chris Cartor, to discuss a variety of interesting assignments. Our current requirements include:

- HP 3000 COBOL
- IBM PL/1
- ICL IDMS TP

P-E Computer Services Limited

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MUMPS

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PLUS PROGRAMMERS
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CAD/CAM PROGRAMMER/LEICESTER

An experienced CAD/CAM programmer is required for a leading CAD/CAM company in the Midlands. The position involves the design and development of CAD/CAM systems for the manufacturing industry. The successful candidate will be responsible for the design and development of CAD/CAM systems for the manufacturing industry. The salary will be commensurate with experience. Details may be obtained from Box No. 1274.

THE ROGER PARKER ORGANISATION**QUALITY —****PERMANENT APPOINTMENTS**

PROJECT LEADER, BUSINESS ANALYST AND ANALYST/PROGRAMMERS - required by American Bank, based London. IBM System 38, RPG3 where applicable. Banking systems experience essential. £14,000c plus banking benefits.

EDP AUDITORS - with degree, ACA qualified to join audit team of major International Bank. London based, but some travel. £15,000 plus benefits.

BUSINESS SYSTEMS ANALYST - Responsible for the installation of Sales Ord. Processing and associated financial systems of DPS6. Challenging opportunity. Based N. England. £11,000c.

BANKING CONSULTANT - Degree preferred, number of years banking systems experience, previous programming background essential. Presentable, good communicator at all levels and good credentials required by expanding software house. £20,000 plus car plus benefits. Home Counties.

TECH SUPPORT SPECIALIST - VAX, VMS, INTEL, CORAL, MAS COT exp. required by recognised software house. Work to OMOD standards. £15,000c - but according to experience. Based Home Counties.

PROGS, SEN PROGS - Well-known American bank requires a number of people with banking systems exp to utilise their three four years' RPG2/Sys 34 experience. Salaries neg starting £10,000. London based.

IBM SYSTEMS PROGRAMMER - Petrochem industry, IBM, BAL, MVS/JES2, ACF/VTAM, TSO, CICS, IMS. £16,000c. London based. Other vacancies on file for DEC, VAX, TANDEM, HP, IBM 34 and 38 professionals, ranging from Programmer to Project Leader, local positions throughout UK.

Freelance register still open and growing. Send cv to: C. Chatlin, Roger Parker Organisation, 4 London Wall Buildings, Blomfield Street, London EC2, or telephone 01-588 6111 for index application card.

4 LONDON WALL BUILDINGS, BLOMFIELD STREET, LONDON EC2M 6YF (01-588 6111)

Are you game for a challenge?

Because if you are, you'll certainly enjoy the variety and interest offered by Palitoy, the UK's leading toy manufacturer and maker of such famous brands as Star Wars, Action Force and Action Man. We're committed to a major development programme on interactive systems based on the IBM system 38.

Operations Supervisor

We now require an Operations Supervisor, ideally with knowledge of IBM System 34/38, with a minimum of 2-3 years' supervisory experience.

Applicants (male or female) should be educated to good 'A' level standard; a knowledge of programming would be beneficial.

O & M Analyst

To analyse and appraise our existing systems to ensure that users are adequately trained and that procedures are followed. In addition, the man or woman appointed will assist in the design of new interactive systems and be responsible for ensuring all documentation is accurately maintained during this period of intensive systems development.

A background in DP work and considerable O & M experience as applied to computer systems is essential.

Analyst/Programmer

RPG 11/111

To develop interactive systems on our IBM System 38.

We require a minimum of 6 months GSD experience, combined with Analyst/Programming experience, using RPG11/111.

An additional computing language would be a benefit. Good communicative skills are essential to liaise between user and development staff.

As a successful and progressive company we can offer competitive salaries together with attractive employment conditions and relocation where appropriate.

Please write or telephone for an application form to Mrs Anne Jacobs, Personnel Manager, Palitoy Company, Owen Street, Coalville, Leicestershire. Tel: Coalville 36388.

Palitoy

Banking in Kuwait

Salaries to £34,000 pa Tax Free + significant additional benefits

Our client is the oldest and largest commercial Bank in Kuwait. They now wish to fill the following positions to enable them to continue their Management Services development.

Project Managers

We are looking for 2 Project Managers with strong banking experience. Knowledge of retail banking systems, foreign exchange systems, general ledger and overall MIS systems is absolutely essential. Successful applicants will already have a good track record in project management and will be expected to be capable of managing more than one project at a time. They will be given every opportunity to continue to develop their career and will need to be self-starters, who are good at liaising with users and with their own technical staff. (Please quote Ref: 401.)

Co-ordinator-Education Services

We are looking for someone to create an important new function. The successful applicant will be expected to give courses in the majority of the following: JCL, VSAM, CICS, COBOL plus general systems analysis courses. The successful applicant will be familiar with self-study courses as well as courses given by IBM and other organisations. This is an exciting opportunity for someone to play a major role in Management Services development. (Please quote Ref: 402.)

Data Communications Engineer

We are looking for someone with good practical experience of data networks. A strong knowledge of telecommunications, modems and local area networks is very important. We are looking for someone with good 'hands on experience' who can play the role of the customer engineer. This is a position that is vital to the continued growth of Management Services, and one that will offer an exciting and significant challenge to someone with the right background. (Please quote Ref: 403.)

All the positions advertised offer genuine career opportunities in an advanced Middle East society where the quality of family living is very high. All the positions require between 7 and 10 years experience. Our client will be in the UK at the end of September and interested applicants should send sensibly comprehensive Curriculum Vitae to John Goldsmith at:-

A&A Consultants (Holding) Ltd
County House, 10 Little Portland Street
London W1N 5DF
Tel: 01-631 4184.

A&A

DALROTH

TAX FREE SALARIES £16,000 - £32,000

Accommodation Medical Transportation Allowance Home Rights Bonus

Our client plans to be in the UK early October to select from our shortlist for these positions. Available working applications would be particularly useful.

DP TRAINER

£16,000 - £22,000

Must have an IBM background and some practical systems and programming experience, ideally using COBOL. Responsibilities will include the preparation and presentation of training courses covering both application and technical subjects for personnel at junior entry through to senior executive levels.

SENIOR BANKING CONSULTANT
£26,000 - £32,000

Must have a Degree or Professional Qualification and extensive experience in money transfers such as FX or FL. Must be capable of working as a very high level DP Specialist advising on the Strategic Planning for Domestic and Foreign Monetary activities.

SYSTEMS ANALYST AND ANALYST PROGRAMMERS
£18,000 - £23,000

Must have an IBM background and solid project development experience including programming in COBOL.

OPERATIONS MANAGER

£20,000 - £25,000

To plan, help configure and supervise the installation and implementation of a multi-CPU TP configuration. Applicants must have planned and run a large MVS installation and be fully conversant with distributed Network Planning Sizing and Tuning.

HARDWARE ENGINEERS

£16,500 - £24,000

Must be able to work alone, or as a team member, on the maintenance and support of a 4300 Network configuration. Applicants must have IBM or IBM compatible experience and be capable of diagnosing faults and maintaining peripherals and CPUs.

SENIOR DBA and DB PLANNER
£25,000 - £36,000

Must have ADABAS, IMS or DBMS experience. Will be responsible for steering the direction and planning the Database Strategy of a major new IBM multi-CPU Distributed Networking Project.

SYSTEMS PROGRAMMERS

£19,000 - £24,000

- ★ DOS VSE, ideally with CICS
- ★ OS/VS1 under VM, ideally with CICS and DL1
- ★ MVS/JES2 or JES3, ideally with VTAM

CONSULTANT PROJECT LEADERS
£22,000 - £26,000

Must be self motivated and capable of Planning, Costing and Running major segments of a large project, or taking total responsibility for a smaller start-up situation. Large IBM Systems experience is essential.

SAUDI ARABIA

ADABAS CUSTOMER SUPPORT SPECIALIST
£18,000 - £25,000

Must have in-depth ADABAS experience and be capable of trouble-shooting and installing the Database, NATURAL and related TP Monitors.

IBM PROGRAMMERS to PROJECT LEADERS

HERTS/MIDD. To £19,000
Two major commercial companies require all levels of staff to help develop and implement their expanding development commitments. Some require all IBM mainframe knowledge plus ability to plan and control work for small groups of professionals in central Applications must have minimum of 3 years COBOL and/or JCL with a preferred working knowledge of IMS or DBMS on an OS/VS1 environment. Ref: C98

PROJECT MANAGER £16,000 + Car + Bonus
With knowledge of IBM and/or other mainframe systems, a Project Manager will manage the development and implementation of a large scale database system. The application will be used by a large number of users. Ref: C99

PROJECT LEADERS

MIDD. £15,000 + Benefits
Major financial organisations require Project Leaders with sound experience in the design and implementation of large scale database systems with a working knowledge of either a command level CICS or DBMS, preferably in a MVS environment. A knowledge of JCL would be useful, as would essential. Excellent career prospects and benefits apply to these positions. Ref: C99

D.B.A. X2 MIDD./LONDON

Two large financial organisations require Database Analysts with a knowledge of IMS, COBOL and/or JCL. One IBM background. Middle Level DBA's with a minimum of 3 years experience would be suitable. A Senior Analyst/Programmer or Analyst. Excellent career prospects and benefits apply. Ref: C99

ANALYST/PROGRAMMERS MIDD./LONDON

Two large financial organisations require Database Analysts with a knowledge of IMS, COBOL and/or JCL. One IBM background. Middle Level DBA's with a minimum of 3 years experience would be suitable. A Senior Analyst/Programmer or Analyst. Excellent career prospects and benefits apply. Ref: C99

IBM PROGRAMMERS

MIDD. £12,000 + Benefits
This international organisation requires staff to help develop and implement their expanding development commitments. Some require all IBM mainframe knowledge plus ability to plan and control work for small groups of professionals in central Applications must have minimum of 3 years COBOL and/or JCL with a preferred working knowledge of IMS or DBMS on an OS/VS1 environment. Ref: C98

SYSTEMS ANALYST LONDON

Leading financial organisation requires staff to help develop and implement their expanding development commitments. Some require all IBM mainframe knowledge plus ability to plan and control work for small groups of professionals in central Applications must have minimum of 3 years COBOL and/or JCL with a preferred working knowledge of IMS or DBMS on an OS/VS1 environment. Ref: C98

COBOL PROGRAMMERS (ANY MAINFRAME) SURREY

Leading manufacturing organisation requires staff to help develop and implement their expanding development commitments. Some require all IBM mainframe knowledge plus ability to plan and control work for small groups of professionals in central Applications must have minimum of 3 years COBOL and/or JCL with a preferred working knowledge of IMS or DBMS on an OS/VS1 environment. Ref: C98

TRAIN in RPG3 SOUTH COAST To £11,000
Leading financial organisation requires staff to help develop and implement their expanding development commitments. Some require all IBM mainframe knowledge plus ability to plan and control work for small groups of professionals in central Applications must have minimum of 3 years COBOL and/or JCL with a preferred working knowledge of IMS or DBMS on an OS/VS1 environment. Ref: C98

OPERATIONS

OPERATIONS MANAGER ESSEX

This company needs an Operations Manager to take charge of a team in an IBM DBMS environment. The successful candidate will have good Supervisory Management skills and a proven knowledge of JCL and/or JCL. Ref: C99

DEC OPERATOR LONDON

International financial organisation requires staff to help develop and implement their expanding development commitments. Some require all IBM mainframe knowledge plus ability to plan and control work for small groups of professionals in central Applications must have minimum of 3 years COBOL and/or JCL with a preferred working knowledge of IMS or DBMS on an OS/VS1 environment. Ref: C98

JNR OPS ANALYST SURREY

International financial organisation requires staff to help develop and implement their expanding development commitments. Some require all IBM mainframe knowledge plus ability to plan and control work for small groups of professionals in central Applications must have minimum of 3 years COBOL and/or JCL with a preferred working knowledge of IMS or DBMS on an OS/VS1 environment. Ref: C98

MVS OPERATOR LONDON

Large financial organisation requires staff to help develop and implement their expanding development commitments. Some require all IBM mainframe knowledge plus ability to plan and control work for small groups of professionals in central Applications must have minimum of 3 years COBOL and/or JCL with a preferred working knowledge of IMS or DBMS on an OS/VS1 environment. Ref: C98

DOS OPERATOR SURREY/LONDON

Two financial organisations require staff to help develop and implement their expanding development commitments. Some require all IBM mainframe knowledge plus ability to plan and control work for small groups of professionals in central Applications must have minimum of 3 years COBOL and/or JCL with a preferred working knowledge of IMS or DBMS on an OS/VS1 environment. Ref: C98

GSD OPERATORS LONDON
This well known company needs staff to help develop and implement their expanding development commitments. Some require all IBM mainframe knowledge plus ability to plan and control work for small groups of professionals in central Applications must have minimum of 3 years COBOL and/or JCL with a preferred working knowledge of IMS or DBMS on an OS/VS1 environment. Ref: C98

BUICK COMPUTER SERVICE RECRUITMENT DIVISION
72 Rochester New, Victoria, London SW1P 1JH
Tel: 01-834 0061 (24 hrs)
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Technical Support Specialists

CAD/CAM SUPPORT PERSONNEL

A leading supplier of Computer Aided Engineering Systems requires support personnel to meet the increasing expansion of business within the United Kingdom.

Customer Support Engineers
Circs £8,000-£11,000

The positions offer excellent opportunities for engineers and computer scientists with experience in the field of CAD/CAM. The successful candidates will work closely with our customers in the development of installed CAD/CAM Systems. In particular duties will include the installation of software on Mini Computer Systems as well as providing on-line customer support. The positions will particularly appeal to individuals interested in solving problems in an engineering environment. Applicants will be educated to degree or HNC standard with at least two years' relevant experience. A knowledge of FORTRAN and VMS or PRIMOS will be considered an advantage. The positions are Cambridge based. A company car will be provided after an initial induction period. Relocation package available if required. Please write, in confidence, enclosing full resume of career to date to:

CIS products

Mr P. H. Kernot at
CIS (Products) LTD
Quayside
CAMBRIDGE CB5 8AB

Contract and/or Permanent Technical Authors

Hardware and Software authors for a large number of clients on projects covering the following topics:

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- Electronics, aircraft and flight simulator HW/SW
- Software, nms and micros, commercial applications
- Electronics, marine applications, analogue experience advantageous
- HW/SW
- Engineering and medical instrumentation HW/SW
- CPU hardware and instruction sets
- Broad based software, commercial applications
- Intelligent terminal documentation HW/SW
- Process control documentation HW/SW
- Telecommunication and networking documentation HW/SW
- Real-time and/or data communications HW/SW
- Locations, various

Outlined above is a selection of our current requirements, space and time make it impossible to list them all, however, if you are thinking of changing your job please telephone for an initial discussion or send a copy of your resume for both contract and permanent positions

Take this opportunity to discuss these and other requirements by phoning Hitchin (0462) 87141, or write to:

Marketing & Recruitment Division
Industrial Artists Limited
21 Bancroft, Hitchin
Hertfordshire SG5 1JP
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Industrial Artists Limited

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Advance your career with a major world leader

Continuous innovation, research and development, an expanding product range and not least, a determined, aggressive marketing policy all combine to make us one of the world's most successful high technology manufacturing companies.

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To help us, we require electronics graduates with several years experience in an electronics design, development or applications environment to work as:

FIELD SALES ENGINEERS

Selling our semiconductor range throughout the UK you will be at the sharp end of the business with total responsibility for major accounts. Your technical knowledge must be supported by sound commercial awareness, enthusiasm, personality and drive. Sales experience would be a distinct advantage - but full training will be given.

FIELD SYSTEMS SPECIALISTS

Working hand in hand with the Field Sales Engineers on major accounts you will be designing our high technology leadership products into equipments to meet specific customer needs. You will need to be well used to working under pressure as strict commercial deadlines have to be met. Ideally you will also possess some microprocessor hardware/software experience.

You will be working on our extensive product range which includes VLSI and LSI integrated circuits, transistors, opto-electronic devices, microprocessors, microcomputers, advanced digital signal processors, semiconductor memories, gate arrays and VLSI programmable system components.

In return for your skills the benefits package will reflect the importance we place on these positions - competitive salary, quality car etc. Field Sales Engineers can also look forward to an excellent commission scheme. Career prospects depend entirely on your own ability - not something many top companies can honestly claim.

To advance your career in high technology send a cv to Gwen Ventris or contact her for an application form at Texas Instruments Limited, Manton Lane, Bedford MK41 7PA. Tel: 0234 67466.

IMS DB/DC

COBOL or PL/1

PROGRAMMERS

URGENTLY REQUIRED FOR NUMEROUS CONTRACTS IN AND AROUND LONDON AND THE MIDLANDS

Please contact either: ISABEL on 01-681 8311 or DEBBIE on (0442) 40761
COMPUTER SEARCH & SELECTION
Hamilton House, Marlowas, Hemel Hempstead, Herts. HP1 1BB

Computer Professionals PARS/ACP/TPF Specialist Programmers/Analysts Come to SAN FRANCISCO

Our client is one of the world's largest financial institutions, a leading commercial bank with headquarters in San Francisco, California.

The bank is now undertaking a major change in on-line systems strategy. This will enable it to maintain an established position of leadership in retail banking and will also provide a base for aggressive expansion into new banking products and services.

A number of new positions are being created as the bank supplements existing IMS systems with a newly-conceived Transaction Processing Facility.

Career opportunities are available for quali-

fied professional programmers and analysts who have had at least 3 years' experience in PARS/ACP/TPF environments. Positions are open at various levels of technical and managerial skill and interest.

Our client provides salaries and benefits appropriate to the US compensation practices for each position. The cultural, recreational and educational advantages of San Francisco are unique in the world. Immigration and relocation assistance will be arranged. Local interviews will be held in October.

Please send full cv, with home phone number, quoting ref: 1109/CW to

Philip Smith
Marpower Consultants
85-87 Jermyn Street, London SW1Y 6JD

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*Phone Richard Millsom, for an informal and confidential discussion of your requirements on 01-354 1055, during office hours or on 01-988 2553 evenings and weekends. Alternatively please send full details to me at:

MARCH COMPUTER RECRUITMENT
1 NOEL ROAD, LONDON N1 8JG

01-354 1055

COMPUTER OPERATIONS SUPERVISOR/OPERATOR

£16,000-£24,000
Applications are invited for the post of Supervisor/Operator to handle the Star-UP component of a new United Kingdom wide computer development for the nursing profession.

The post is located in refurbished premises in central Edinburgh. The National Board for Nursing, Midwifery and Health Visiting for Scotland will operate an on-line computer database, shared with other other National Boards and a Central Council, using an IBM mainframe computer with terminals, terminals and telecommunication and knowledge of data handling and control. Local equipment consists of mini computers, providing batch and on-line I/O facilities.

Further information and application forms to be returned by 22nd September 1983. Applications should be sent to: Mr Peter Taylor, National Board for Nursing, Midwifery and Health Visiting for Scotland, 22 Queen Street, Edinburgh EH2 1JG.